

# SHEKAR ENGINEERING, PLC

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AWQ-L6D

Con 12-1-1  
Doc # 32991

March 4, 2005

Mr. Mario Gillotti, President  
The Gillotti Companies  
5600 Enterprise Drive  
Grimes, IA 50111

RE: Concrete Supply Construction Rubble Site  
1108 SE 30<sup>th</sup> Street, Des Moines, Iowa.  
Landfill Permit #77-SDP-86P.

Dear Mr. Gillotti:

Enclosed please find 2004 annual site monitoring report for the referenced site. The Iowa Department of Natural Resources approved Hydrologic Monitoring System Plan (HMS) requires submittal of annual monitoring reports. I have submitted a copy of the annual monitoring report to the IDNR.

Should you have any questions or need additional information, please feel free to call Mr. Chandra Shekar at 515-334-5062.

Sincerely,



Mr. Chandra Shekar, P.E.  
Iowa P.E. Registration #13663

cc:  
Mr. Jeff Simmons  
IDNR Energy & Waste Management Bureau  
Wallace State Office Building  
Des Moines, IA 50319

**DATE STAMP**

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# **ANNUAL LANDFILL MONITORING REPORT (2004)**

**CONCRETE SUPPLY AND CONSTRUCTION RUBBLE SITE  
1108 SE 30<sup>TH</sup> STREET  
DES MOINES, IA**

**IDNR PERMIT NUMBER: 77-SDP-24-86P**

## **SUBMITTED TO**

The Gillotti Companies  
5600 Enterprise Drive  
Grimes, IA 50111

and

Solid Waste Section of the IDNR

## **PREPARED BY**

**SHEKAR ENGINEERING, PLC  
PO BOX 3625  
DES MOINES, IA 50322  
Phone: 515-334-5062, FAX: 515-334-5052**

**Project Engineer: Mr. Chandra Shekar, P.E.**

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Iowa.

Signature:



Name: Mr. Chandra Shekar, P.E.

Date: 3/4/2005

Registration No.: 13663

Expiration Date: 12/1/2005





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# **SITE MONITORING ANNUAL REPORT - 2004**

**Concrete Supply Construction Rubble Site**

**(Landfill Permit #77-SDP-86P)**

**1108 SE 30<sup>th</sup> Street, Des Moines, Iowa 50137.**

## **1.0 Introduction:**

Shekar Engineering (SE) has prepared this annual report for the Concrete Supply and Construction Rubble Site in Des Moines, Iowa. The report is based upon semi-annual and annual groundwater sampling of the on-site monitoring wells and a surface water body.

## **2.0 Background Information**

The Concrete Supply and Construction Rubble Site in Des Moines, Iowa, which used to be a construction and demolition (C & D) Landfill was closed in 1989. At present, the site does not accept any regulated material. However, to fill the low-lying areas of the site, clean dirt and broken concrete are accepted.

Geological units encountered during drilling generally consisted of approximately 5 to 23 feet of fill underlain by approximately 40 to 60 feet of well graded sands with gravels overlying gray and dark gray shales. The shales encountered at the site appear to be consistent with the regional Pennsylvanian-age, Cherokee Group shales. Groundwater is at approximately 20 to 25 feet below ground surface. Groundwater flow direction across the site is towards south.

A Hydrologic Monitoring System Plan (HMSP) was approved (6/19/96) by the Iowa Department of Natural Resource (IDNR) and required quarterly site monitoring for the first year and semi annual site monitoring for the second year and so on. Landfill Closure Permit was approved in January 2000.

As part of the monitoring, groundwater and surface water samples were collected and analyzed for Iowa Landfill Parameter e during semi-annual monitoring events (April), and for e and f during the annual monitoring event (October). The analytical results of the groundwater and surface water samples are tabulated in Tables 1 thorough 10.

### **3.0 Monitoring Well Maintenance and Performance Evaluation**

SE evaluated water levels in the monitoring wells using the data obtained during the current annual sampling event and previous sampling events. This evaluation indicates that depth to water in monitoring wells is consistent.

Measurements taken between 1997 and 2003 indicate that all wells are intact and capable of measuring the required parameters. A Table showing the monitoring well location and the respective aquifers is indicated below.

#### **Monitoring Well Locations and the Respective Aquifers**

Upgradient Wells	MW-92-1, MW-92-2, MW-92-1R
Downgradient Wells	MW-92-4, MW-92-5, MW-92-6, MW-92-7
Crossgradient Well	MW-92-3
Upper Aquifer Wells (Monitoring wells are at shallow depth)	MW-92-1, MW-92-1R, MW-92-3, MW-92-4, MW-92-6
Lower Aquifer Wells (Monitoring wells that are deep)**	MW-92-2, MW-92-5, MW-92-7

\*\*Note: Lower Aquifer Wells (MW-92-2 and MW-92-7 were drilled a few feet in to shale layer (bedrock); and MW-92-5 was drilled 13 feet in to the bedrock. The 13 feet borehole (in bedrock) was plugged using bentonite. The screened intervals of these wells (MW-92-2, MW-92-5, & MW-92-7) do not extend in the bedrock.)

The IDNR letter dated January 4, 2000 required installation of an upgradient well to monitor for Trichloroethylene. A monitoring well (MW-92-1R) was installed to the south of MW-92-1 in March of 2000.

### **4.0 Groundwater Table Contour**

Groundwater table contour maps (Appendix – 2) were developed using the static groundwater levels (SWLs) recorded on April 30, and October 13, 2004. The groundwater flow direction in the vicinity of the site is towards south. A review of the SWLs does not indicate groundwater mounding at the site. Static groundwater levels are tabulated below.

Monitoring Well	Top of Casing Elevation	SWL on 4/30/04	SWL on 10/13/04	Comments
MW-92-1	796.82	777.87	778.65	Upgradient shallow well
MW-92-2	797.47	777.84	778.69	Upgradient deep well
MW-92-1R	789.92	777.54	778.27	Upgradient shallow well
MW-92-3	797.70	776.93	777.43	Crossgradient shallow well
MW-92-4	799.27	776.66	777.17	Downgradient shallow well
MW-92-5	799.52	776.73	777.18	Downgradient deep well
MW-92-6	801.38	776.73	777.09	Downgradient shallow well
MW-92-7	801.50	776.63	777.07	Downgradient deep well
L-1	799.80	Dry	Dry	Leachate piezometer
L-2	806.15	Dry	Dry	Leachate piezometer

## **5.0 Methods of Statistical Analysis**

SE personnel collected groundwater samples from 8 monitoring wells (MW-92-1, through MW-92-7, and MW-92-1R) and a surface water body (SW-1). The samples were collected according to the protocols set forth in the HMSP and sent to a certified laboratory for analysis of the proper parameters.

Keystone Laboratories of Newton, Iowa conducted the laboratory analyses of groundwater and surface water samples. After receiving the results of the laboratory analyses, SE personnel conducted statistical analysis on the groundwater monitoring data to evaluate the impact of the landfill on the groundwater quality. The mean and standard deviation of each parameter for upgradient monitoring points were calculated as required in Subrule 567-103.2 (6) of the IAC.

After entering the laboratory results and field measurements into a spreadsheet, the following formula was used to calculate the standard deviation:

$$s = \left( \sum \frac{(x - M)^2}{n-1} \right)^{1/2}$$

Where:

s = sample standard deviation  
x = individual data  
M = sample mean  
n = number of data points in set

The downgradient control limits were calculated separately for the upper and lower aquifers. The results of the statistical evaluation are indicated in Tables 12 through 15.

## **6.0 Discussion**

SE did not conduct a statistical evaluation of chemicals, which were always below the laboratory detection limits. The details of the statistical evaluation exceedences are tabulated in Table 12 through 15. Specific information included in these Tables is indicated below:

- Table 12 indicates the contaminants, which exceeded upgradient mean +2(standard deviation) in the upper aquifer (monitoring wells are shallow).
- Table 13 indicates the contaminants, which exceeded both action level and upgradient mean +2(standard deviation) in the upper aquifer.
- Table 14 indicates the contaminants, which exceeded upgradient mean +2(standard deviation) in the lower aquifer (monitoring wells are deep).
- Table 13 indicates surface water sampling results that exceeded action levels

**6.1 Methane monitoring:** SE personnel conducted methane monitoring along the landfill boundary and fill area. Table 16 indicates the monitoring results from January 2001 through April 2002. A map indicating the location of methane sampling is attached to Appendix 2. Non-detectable concentrations of methane were recorded during this period.

Shekar Engineering requested IDNR for a variance to terminate methane monitoring. The IDNR approved (May 20, 2002) Amendment #4 to the permit and allowed termination of methane monitoring.

**6.2 Leachate Wells:** Piezometers L-1 and L-2, which were installed to monitor leachate quality and migration have always remained dry. This is an indication that the landfill leachates are not impacting the local groundwater.

## **7.0 Recommendation**

Shekar Engineering recommends continued site monitoring in accordance with the approved Hydrologic Monitoring System Plan.

**APPENDIX - 1  
TABLES**

**TABLE-1: GROUNDWATER ANALYTICAL RESULTS (MW-92-1)**

Boring / Well Number	MCL or Action Level	MW-92-1	MW-92-1	MW-92-1	MW-92-1	MW-92-1	MW-92-1	MW-92-1	MW-92-1
Date Sampled	NA	4/2/97	7/28/97	10/20/97	1/28/98	9/10/98	3/23/99	4/25/00	10/25/00
Elevations - Ground Surface	NA								
- Top of Screen	NA								
- Static Groundwater	NA	18.13	16.55	18.88	19.28	15.57	19.06	21.53	21.06
1,1,1-Trichloroethane ( $\mu\text{g/L}$ )	200	<1	<1	<1	<1	NT	<1	NT	NT
1,1-Dichloroethane ( $\mu\text{g/L}$ )	NA	<1	<1	<1	<1	NT	<1	NT	NT
1,2-Dichloroethane ( $\mu\text{g/L}$ )	5	<0.4	<0.4	<0.4	<0.4	NT	<0.4	NT	NT
1,4-Dichlorobenzene ( $\mu\text{g/L}$ )	600	<1	<1	<1	<1	NT	<1	NT	NT
Benzene ( $\mu\text{g/L}$ )	5	<1	<1	<1	<1	NT	<1	NT	NT
Carbon Tetrachloride ( $\mu\text{g/L}$ )	5	<0.3	<0.3	<0.3	<0.3	NT	<0.3	NT	NT
Trichloroethylene ( $\mu\text{g/L}$ )	5	6.4	3	6	6.9	NT	6.3	9.7	20
Arsenic, dissolved (mg/L)	0.05	<0.001	<0.001	<0.001	<0.001	NT	<0.001	NT	NT
Barium, dissolved (mg/L)	2	0.091	0.089	0.085	0.098	NT	0.085	NT	NT
Cadmium, dissolved (mg/L)	0.005	<0.001	<0.001	<0.001	<0.001	NT	<0.001	NT	NT
Chromium, dissolved (mg/L)	0.1	<0.03	<0.03	<0.03	<0.03	NT	<0.03	NT	NT
Copper, dissolved (mg/L)	1	<0.03	<0.03	<0.03	<0.03	NT	<0.03	NT	NT
Iron, dissolved (mg/L)	0.3	<0.03	<0.03	<0.03	<0.03	<0.03	0.102	<0.03	<0.03
Lead, dissolved (mg/L)	0.015	<0.005	<0.005	<0.005	<0.005	NT	<0.005	NT	NT
Magnesium, dissolved (mg/L)	NA	46.7	46.9	43.3	45	NT	42.1	NT	NT
Mercury, dissolved (mg/L)	0.002	<0.0005	<0.0005	<0.0005	<0.0005	NT	<0.0005	NT	NT
Zinc, dissolved (mg/L)	5	<0.03	<0.03	<0.03	<0.03	NT	<0.03	NT	NT
Chemical Oxygen Demand (mg/L)	NA	<10	<10	<10	<10	<10	<10	<10	<10
Chloride (mg/L)	250	40	49	41	44	49	34	37	41
Nitrogen, Ammonia (mg/L)	NA	<1	<1	<1	<1	<1	1.9	<1	<1
Phenols, total (mg/L)	4	NT	NT	NT	<0.1	NT	<0.1	NT	<0.1
Total Organic Halogens (TOX) (mg/L)	none	NT	NT	NT	0.05	NT	0.07	NT	0.07

NT = Not Tested

**TABLE-1 Continued: GROUNDWATER ANALYTICAL RESULTS (MW-92-1)**

Boring / Well Number	MCL or Action Level	MW-92-1	MW-92-1	MW-92-1	MW-92-1	MW-92-1	MW-92-1	MW-92-1	MW-92-1
Date Sampled	NA	4/30/01	10/29/01	4/26/02	10/31/02	4/24/03	10/30/03	4/30/04	10/13/04
Elevations - Ground Surface	NA								
- Top of Screen	NA								
- Static Groundwater	NA	19.04	19.57	20.85	19.70	20.69	20.02	18.95	18.17
1,1,1-Trichloroethane ( $\mu\text{g/L}$ )	200	NT	NT	NT	NT	NT	NT	NT	NT
1,1-Dichloroethane ( $\mu\text{g/L}$ )	NA	NT	NT	NT	NT	NT	NT	NT	NT
1,2-Dichloroethane ( $\mu\text{g/L}$ )	5	NT	NT	NT	NT	NT	NT	NT	NT
1,4-Dichlorobenzene ( $\mu\text{g/L}$ )	600	NT	NT	NT	NT	NT	NT	NT	NT
Benzene ( $\mu\text{g/L}$ )	5	NT	NT	NT	NT	NT	NT	NT	NT
Carbon Tetrachloride ( $\mu\text{g/L}$ )	5	NT	NT	NT	NT	NT	NT	NT	NT
Trichloroethylene ( $\mu\text{g/L}$ )	5	4.4	4.8	5.9	6.8	7.3	7.0	6.3	6.4
Arsenic, dissolved (mg/L)	0.05	NT	NT	NT	NT	NT	NT	NT	NT
Barium, dissolved (mg/L)	2	NT	NT	NT	NT	NT	NT	NT	NT
Cadmium, dissolved (mg/L)	0.005	NT	NT	NT	NT	NT	NT	NT	NT
Chromium, dissolved (mg/L)	0.1	NT	NT	NT	NT	NT	NT	NT	NT
Copper, dissolved (mg/L)	1	NT	NT	NT	NT	NT	NT	NT	NT
Iron, dissolved (mg/L)	0.3	0.368	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.208
Lead, dissolved (mg/L)	0.015	NT	NT	NT	NT	NT	NT	NT	NT
Magnesium, dissolved (mg/L)	NA	NT	NT	NT	NT	NT	NT	NT	NT
Mercury, dissolved (mg/L)	0.002	NT	NT	NT	NT	NT	NT	NT	NT
Zinc, dissolved (mg/L)	5	NT	NT	NT	NT	NT	NT	NT	NT
Chemical Oxygen Demand (mg/L)	NA	<10	<10	14	<10	17	<10	<10	<10
Chloride (mg/L)	250	49	38	39	53	40	32	42	44
Nitrogen, Ammonia (mg/L)	NA	<1	<1	<1	<1	<1	<1	<1	<1
Phenols, total (mg/L)	4	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1
Total Organic Halogens (TOX) (mg/L)	none	NT	0.053	NT	0.107	NT	0.051	NT	0.023

NT = Not Tested

**TABLE-2 Continued: GROUNDWATER ANALYTICAL RESULTS (MW-92-1R)**

Boring / Well Number	MCL or Action Level	MW-92-1R	MW-92-1R	MW-92-1R	MW-92-1R (Duplicate)	MW-92-1R	MW-92-1R	MW-92-1R	MW-92-1R
Date Sampled	NA	4/25/00	7/31/00	10/25/00	10/25/00	1/12/01	4/30/01	10/29/01	4/26/02
Elevations - Ground Surface	NA								
- Top of Screen	NA								
- Static Groundwater	NA	19.54	18.53	19.96	19.96	15.17	12.34	13.23	14.42
1,1,1-Trichloroethane ( $\mu\text{g/L}$ )	200	<1	<1	<1	<1	<2	NT	NT	NT
1,1-Dichloroethane ( $\mu\text{g/L}$ )	NA	<1	<1	<1	<1	<2	NT	NT	NT
1,2-Dichloroethane ( $\mu\text{g/L}$ )	5	<0.4	<0.4	<0.4	<0.4	<0.8	NT	NT	NT
1,4-Dichlorobenzene ( $\mu\text{g/L}$ )	600	<1	<1	<1	<1	<2	NT	NT	NT
Benzene ( $\mu\text{g/L}$ )	5	<1	<1	<1	<1	<2	NT	NT	NT
Carbon Tetrachloride ( $\mu\text{g/L}$ )	5	<0.3	<0.3	<0.3	<0.3	<0.6	NT	NT	NT
Trichloroethylene ( $\mu\text{g/L}$ )	5	<1	<1	<1	<1	<2	<1	<1	<1
Arsenic, dissolved (mg/L)	0.05	<0.001	<0.001	<0.001	<0.001	0.002	NT	NT	NT
Barium, dissolved (mg/L)	2	0.1	0.175	0.25	0.024	0.022	NT	NT	NT
Cadmium, dissolved (mg/L)	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	NT	NT	NT
Chromium, dissolved (mg/L)	0.1	<0.03	<0.03	<0.03	<0.03	<0.03	NT	NT	NT
Copper, dissolved (mg/L)	1	<0.03	<0.03	<0.03	<0.03	<0.03	NT	NT	NT
Iron, dissolved (mg/L)	0.3	<0.03	0.066	0.066	<0.03	<0.03	0.086	0.03	<0.03
Lead, dissolved (mg/L)	0.015	<0.005	<0.005	<0.005	<0.005	<0.005	NT	NT	NT
Magnesium, dissolved (mg/L)	NA	77.3	83.6	83.2	85	72.5	NT	NT	NT
Mercury, dissolved (mg/L)	0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	NT	NT	NT
Zinc, dissolved (mg/L)	5	<0.03	<0.03	<0.03	<0.03	<0.03	NT	NT	NT
Chemical Oxygen Demand (mg/L)	NA	12	21	<10	<10	<10	<10	<10	11
Chloride (mg/L)	250	82	132	68	65	47	68	49	67
Nitrogen, Ammonia (mg/L)	NA	<1	<1	<1	<1	<1	<1	<1	<1
Phenols, total (mg/L)	4	<0.1	<0.1	<0.1	<0.1	<0.1	NT	<0.1	NT
Total Organic Halogens (TOX) (mg/L)	none	0.06	NT	0.06	0.05	0.05	NT	0.020	NT

NT = Not Tested.

**TABLE-2 Continued: GROUNDWATER ANALYTICAL RESULTS (MW-92-1R)**

Boring / Well Number	MCL or Action Level	MW-92-1R	MW-92-1R	MW-92-1R (Duplicate)	MW-92-1R	MW-92-1R	MW-92-1R	MW-92-1R	MW-92-1R
Date Sampled	NA	10/31/02	4/24/03	4/24/03	10/30/03	4/30/04	10/13/04		
Elevations - Ground Surface	NA								
- Top of Screen	NA								
- Static Groundwater	NA	13.27	14.15	14.15	13.65	12.38	11.65		
1,1,1-Trichloroethane ( $\mu\text{g/L}$ )	200	NT	NT	NT	NT	NT	NT		
1,1-Dichloroethane ( $\mu\text{g/L}$ )	NA	NT	NT	NT	NT	NT	NT		
1,2-Dichloroethane ( $\mu\text{g/L}$ )	5	NT	NT	NT	NT	NT	NT		
1,4-Dichlorobenzene ( $\mu\text{g/L}$ )	600	NT	NT	NT	NT	NT	NT		
Benzene ( $\mu\text{g/L}$ )	5	NT	NT	NT	NT	NT	NT		
Carbon Tetrachloride ( $\mu\text{g/L}$ )	5	NT	NT	NT	NT	NT	NT		
Trichloroethylene ( $\mu\text{g/L}$ )	5	<1	<1	<1	<1	<0.3	<0.3		
Arsenic, dissolved (mg/L)	0.05	NT	NT	NT	NT	NT	NT		
Barium, dissolved (mg/L)	2	NT	NT	NT	NT	NT	NT		
Cadmium, dissolved (mg/L)	0.005	NT	NT	NT	NT	NT	NT		
Chromium, dissolved (mg/L)	0.1	NT	NT	NT	NT	NT	NT		
Copper, dissolved (mg/L)	1	NT	NT	NT	NT	NT	NT		
Iron, dissolved (mg/L)	0.3	0.03	<0.03	<0.03	<0.03	<0.03	<0.03		
Lead, dissolved (mg/L)	0.015	NT	NT	NT	NT	NT	NT		
Magnesium, dissolved (mg/L)	NA	NT	NT	NT	NT	NT	NT		
Mercury, dissolved (mg/L)	0.002	NT	NT	NT	NT	NT	NT		
Zinc, dissolved (mg/L)	5	NT	NT	NT	NT	NT	NT		
Chemical Oxygen Demand (mg/L)	NA	<10	<10	<10	<10	<10	<10		
Chloride (mg/L)	250	79	89	96	68	59	53		
Nitrogen, Ammonia (mg/L)	NA	<1	<1	<1	<1	<1	<1		
Phenols, total (mg/L)	4	<0.1	NT	NT	<0.1	NT	<0.1		
Total Organic Halogens (TOX) (mg/L)	none	0.028	NT	NT	0.026	NT	0.023		

NT = Not Tested.

**TABLE-3: GROUNDWATER ANALYTICAL RESULTS (MW-92-2)**

Boring / Well Number	MCL or Action Level	MW-92-2	MW-92-2	Duplicate (MW-92-2)	MW-92-2	MW-92-2	MW-92-2	MW-92-2	MW-92-2
Date Sampled	NA	4/2/97	7/28/97	7/28/97	10/20/97	1/28/98	9/10/98	3/23/99	4/25/00
Elevations - Ground Surface	NA								
- Top of Screen	NA								
- Static Groundwater	NA	18.80	17.07	17.07	19.57	19.98	16.24	19.76	22.20
1,1,1-Trichloroethane ( $\mu\text{g/L}$ )	200	<1	<1	<1	<1	<1	NT	<1	NT
1,1-Dichloroethane ( $\mu\text{g/L}$ )	NA	<1	<1	<1	<1	<1	NT	<1	NT
1,2-Dichloroethane ( $\mu\text{g/L}$ )	5	<0.4	<0.4	<0.4	<0.4	<0.4	NT	<0.4	NT
1,4-Dichlorobenzene ( $\mu\text{g/L}$ )	600	<1	<1	<1	<1	<1	NT	<1	NT
Benzene ( $\mu\text{g/L}$ )	5	<1	<1	<1	<1	<1	NT	<1	NT
Carbon Tetrachloride ( $\mu\text{g/L}$ )	5	<0.3	<0.3	<0.3	<0.3	<0.3	NT	<0.3	NT
Trichloroethylene ( $\mu\text{g/L}$ )	5	<1	<1	<1	<1	<1	NT	<1	5.3
Arsenic, dissolved (mg/L)	0.05	<0.001	<0.001	<0.001	<0.001	0.001	NT	<0.001	NT
Barium, dissolved (mg/L)	2	0.139	0.101	0.1	0.113	0.145	NT	0.112	NT
Cadmium, dissolved (mg/L)	0.005	0.002	0.001	0.001	<0.001	<0.001	NT	<0.001	NT
Chromium, dissolved (mg/L)	0.1	<0.03	<0.03	<0.03	<0.03	<0.03	NT	<0.03	NT
Copper, dissolved (mg/L)	1	<0.03	<0.03	<0.03	<0.03	<0.03	NT	<0.03	NT
Iron, dissolved (mg/L)	0.3	8.72	0.053	0.122	2.76	9.7	8.35	8.37	0.56
Lead, dissolved (mg/L)	0.015	<0.005	<0.005	<0.005	<0.005	<0.005	NT	<0.005	NT
Magnesium, dissolved (mg/L)	NA	48.5	46.5	48.1	46.8	49	NT	41.6	NT
Mercury, dissolved (mg/L)	0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	NT	<0.0005	NT
Zinc, dissolved (mg/L)	5	<0.03	<0.03	<0.047	0.03	<0.03	NT	<0.03	NT
Chemical Oxygen Demand (mg/L)	NA	<10	<10	<10	<10	<10	<10	<10	<10
Chloride (mg/L)	250	79	77	76	68	82	81.2	80	27
Nitrogen, Ammonia (mg/L)	NA	<1	<1	<1	<1	<1	<1	<1	<1
Phenols, total (mg/L)	4	NT	NT	NT	NT	<0.1	NT	<0.1	NT
Total Organic Halogens (TOX) mg/L	none	NT	NT	NT	NT	<0.01	NT	0.01	NT

NT = Not Tested

**TABLE-3 Continued: GROUNDWATER ANALYTICAL RESULTS (MW-92-2)**

Boring / Well Number	MCL or Action Level	MW-92-2	MW-92-2	MW-92-2	MW-92-2	MW-92-2	MW-92-2	MW-92-2	MW-92-2
Date Sampled	NA	7/31/00	10/25/00	4/30/01	10/29/01	4/26/02	10/31/02	4/24/03	10/30/03
Elevations - Ground Surface	NA								
- Top of Screen	NA								
- Static Groundwater	NA	20.49	21.75	19.71	20.25	21.51	20.51	21.37	20.69
1,1,1-Trichloroethane ( $\mu\text{g/L}$ )	200	NT	NT	NT	NT	NT	NT	NT	NT
1,1-Dichloroethane ( $\mu\text{g/L}$ )	NA	NT	NT	NT	NT	NT	NT	NT	NT
1,2-Dichloroethane ( $\mu\text{g/L}$ )	5	NT	NT	NT	NT	NT	NT	NT	NT
1,4-Dichlorobenzene ( $\mu\text{g/L}$ )	600	NT	NT	NT	NT	NT	NT	NT	NT
Benzene ( $\mu\text{g/L}$ )	5	NT	NT	NT	NT	NT	NT	NT	NT
Carbon Tetrachloride ( $\mu\text{g/L}$ )	5	NT	NT	NT	NT	NT	NT	NT	NT
Trichloroethylene ( $\mu\text{g/L}$ )	5	3.8	4.6	<1	<1	<1	<1	6.9	<1
Arsenic, dissolved (mg/L)	0.05	NT	NT	NT	NT	NT	NT	NT	NT
Barium, dissolved (mg/L)	2	NT	NT	NT	NT	NT	NT	NT	NT
Cadmium, dissolved (mg/L)	0.005	NT	NT	NT	NT	NT	NT	NT	NT
Chromium, dissolved (mg/L)	0.1	NT	NT	NT	NT	NT	NT	NT	NT
Copper, dissolved (mg/L)	1	NT	NT	NT	NT	NT	NT	NT	NT
Iron, dissolved (mg/L)	0.3	NT	<0.03	7.06	8.06	7.62	6.33	<0.03	6.29
Lead, dissolved (mg/L)	0.015	NT	NT	NT	NT	NT	NT	NT	NT
Magnesium, dissolved (mg/L)	NA	NT	NT	NT	NT	NT	NT	NT	NT
Mercury, dissolved (mg/L)	0.002	NT	NT	NT	NT	NT	NT	NT	NT
Zinc, dissolved (mg/L)	5	NT	NT	NT	NT	NT	NT	NT	NT
Chemical Oxygen Demand (mg/L)	NA	NT	<10	<10	<10	<10	11	18	<10
Chloride (mg/L)	250	NT	51	68	69	62	71	36	70
Nitrogen, Ammonia (mg/L)	NA	NT	<1	<1	<1	<1	<1	<1	<1
Phenols, total (mg/L)	4	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1
Total Organic Halogens (TOX) (mg/L)	none	NT	0.03	NT	0.020	NT	0.019	NT	<0.010

NT = Not Tested

**TABLE-3 Continued: GROUNDWATER ANALYTICAL RESULTS (MW-92-2)**

Boring / Well Number	MCL or Action Level	MW-92-2	MW-92-2	MW-92-2	MW-92-2	MW-92-2	MW-92-2	MW-92-2	MW-92-2
Date Sampled	NA	4/30/04	10/13/04						
Elevations - Ground Surface	NA								
- Top of Screen	NA								
- Static Groundwater	NA	19.63	18.78						
1,1,1-Trichloroethane ( $\mu\text{g/L}$ )	200	NT	NT						
1,1-Dichloroethane ( $\mu\text{g/L}$ )	NA	NT	NT						
1,2-Dichloroethane ( $\mu\text{g/L}$ )	5	NT	NT						
1,4-Dichlorobenzene ( $\mu\text{g/L}$ )	600	NT	NT						
Benzene ( $\mu\text{g/L}$ )	5	NT	NT						
Carbon Tetrachloride ( $\mu\text{g/L}$ )	5	NT	NT						
Trichloroethylene ( $\mu\text{g/L}$ )	5	<0.3	0.8						
Arsenic, dissolved (mg/L)	0.05	NT	NT						
Barium, dissolved (mg/L)	2	NT	NT						
Cadmium, dissolved (mg/L)	0.005	NT	NT						
Chromium, dissolved (mg/L)	0.1	NT	NT						
Copper, dissolved (mg/L)	1	NT	NT						
Iron, dissolved (mg/L)	0.3	7.67	7.21						
Lead, dissolved (mg/L)	0.015	NT	NT						
Magnesium, dissolved (mg/L)	NA	NT	NT						
Mercury, dissolved (mg/L)	0.002	NT	NT						
Zinc, dissolved (mg/L)	5	NT	NT						
Chemical Oxygen Demand (mg/L)	NA	17	<10						
Chloride (mg/L)	250	73	72						
Nitrogen, Ammonia (mg/L)	NA	<1	<1						
Phenols, total (mg/L)	4	NT	<0.1						
Total Organic Halogens (TOX) (mg/L)	none	NT	0.020						

NT = Not Tested

**TABLE-4: GROUNDWATER ANALYTICAL RESULTS (MW-92-3)**

Boring / Well Number	MCL or Action Level	MW-92-3	MW-92-3	MW-92-3	MW-92-3	MW-92-3 Duplicate	MW-92-3	MW-92-3	MW-92-3
Date Sampled	NA	4/25/00	7/31/00	10/25/00	1/12/01	1/12/01	4/30/01	10/29/01	4/26/02
Elevations - Ground Surface	NA								
- Top of Screen	NA								
- Static Groundwater	NA	20.10	18.03	23.45	23.66	23.66	20.00	22.04	22.89
1,1,1-Trichloroethane ( $\mu\text{g/L}$ )	200	<1	<1	<1	<1	<1	NT	NT	NT
1,1-Dichloroethane ( $\mu\text{g/L}$ )	NA	<1	<1	<1	<1	<1	NT	NT	NT
1,2-Dichloroethane ( $\mu\text{g/L}$ )	5	<0.4	<0.4	<0.4	<0.4	<0.4	NT	NT	NT
1,4-Dichlorobenzene ( $\mu\text{g/L}$ )	600	<1	<1	<1	<1	<1	NT	NT	NT
Benzene ( $\mu\text{g/L}$ )	5	<1	<1	<1	<1	<1	NT	NT	NT
Carbon Tetrachloride ( $\mu\text{g/L}$ )	5	<0.3	<0.3	<0.3	<0.3	<0.3	NT	NT	NT
Trichloroethylene ( $\mu\text{g/L}$ )	5	<1	<1	<1	<1	<1	<1	<1	<1
Arsenic, dissolved (mg/L)	0.05	<0.001	<0.001	<0.001	0.001	0.001	NT	NT	NT
Barium, dissolved (mg/L)	2	0.087	0.111	0.081	0.054	0.052	NT	NT	NT
Cadmium, dissolved (mg/L)	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	NT	NT	NT
Chromium, dissolved (mg/L)	0.1	<0.03	<0.03	<0.03	<0.03	<0.03	NT	NT	NT
Copper, dissolved (mg/L)	1	<0.03	<0.03	<0.03	<0.03	<0.03	NT	NT	NT
Iron, dissolved (mg/L)	0.3	0.026	0.026	<0.03	<0.03	0.046	<0.03	<0.03	<0.03
Lead, dissolved (mg/L)	0.015	<0.005	<0.005	<0.005	<0.005	<0.005	NT	NT	NT
Magnesium, dissolved (mg/L)	NA	37.8	35.2	30.7	33.3	32.8	NT	NT	NT
Mercury, dissolved (mg/L)	0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	NT	NT	NT
Zinc, dissolved (mg/L)	5	<0.03	<0.03	<0.03	<0.03	<0.03	NT	NT	NT
Chemical Oxygen Demand (mg/L)	NA	<10	20	<10	<10	<10	<10	<10	11
Chloride (mg/L)	250	61	11	41	50	45	26	40	55
Nitrogen, Ammonia (mg/L)	NA	<1	<1	<1	<1	<1	<1	<1	<1
Phenols, total (mg/L)	4	<0.1	<0.1	<0.1	<0.1	<0.1	NT	<0.1	NT
Total Organic Halogens (TOX) (mg/L)	none	0.06	NT	0.04	0.03	0.03	NT	0.017	NT

NT = Not Tested

**TABLE-4 Continued: GROUNDWATER ANALYTICAL RESULTS (MW-92-3)**

Boring / Well Number	MCL or Action Level	MW-92-3	MW-92-3	MW-92-3	MW-92-3 Duplicate	MW-92-3	MW-92-3	MW-92-3	MW-92-3
Date Sampled	NA	10/31/02	4/24/03	10/30/03	10/30/03	4/30/04	10/13/04		
Elevations - Ground Surface	NA								
- Top of Screen	NA								
- Static Groundwater	NA	21.89	22.54	22.29	22.29	20.77	20.27		
1,1,1-Trichloroethane ( $\mu\text{g/L}$ )	200	NT	NT	NT	NT	NT	NT		
1,1-Dichloroethane ( $\mu\text{g/L}$ )	NA	NT	NT	NT	NT	NT	NT		
1,2-Dichloroethane ( $\mu\text{g/L}$ )	5	NT	NT	NT	NT	NT	NT		
1,4-Dichlorobenzene ( $\mu\text{g/L}$ )	600	NT	NT	NT	NT	NT	NT		
Benzene ( $\mu\text{g/L}$ )	5	NT	NT	NT	NT	NT	NT		
Carbon Tetrachloride ( $\mu\text{g/L}$ )	5	NT	NT	NT	NT	NT	NT		
Trichloroethylene ( $\mu\text{g/L}$ )	5	<1	<1	<1	<1	0.3	<0.3		
Arsenic, dissolved (mg/L)	0.05	NT	NT	NT	NT	NT	NT		
Barium, dissolved (mg/L)	2	NT	NT	NT	NT	NT	NT		
Cadmium, dissolved (mg/L)	0.005	NT	NT	NT	NT	NT	NT		
Chromium, dissolved (mg/L)	0.1	NT	NT	NT	NT	NT	NT		
Copper, dissolved (mg/L)	1	NT	NT	NT	NT	NT	NT		
Iron, dissolved (mg/L)	0.3	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		
Lead, dissolved (mg/L)	0.015	NT	NT	NT	NT	NT	NT		
Magnesium, dissolved (mg/L)	NA	NT	NT	NT	NT	NT	NT		
Mercury, dissolved (mg/L)	0.002	NT	NT	NT	NT	NT	NT		
Zinc, dissolved (mg/L)	5	NT	NT	NT	NT	NT	NT		
Chemical Oxygen Demand (mg/L)	NA	14	<10	22	<10	<10	11		
Chloride (mg/L)	250	45	58	44	39	39	24		
Nitrogen, Ammonia (mg/L)	NA	<1	<1	<1	<1	<1	<1		
Phenols, total (mg/L)	4	<0.1	NT	<0.1	<0.1	NT	<0.1		
Total Organic Halogens (TOX) (mg/L)	none	0.042	NT	0.017	0.015	NT	0.013		

NT = Not Tested

**TABLE-5: GROUNDWATER ANALYTICAL RESULTS (MW-92-4)**

Boring / Well Number	MCL or Action Level	MW-92-4	MW-92-4	MW-92-4	MW-92-4	Mw-92-4	MW-92-4	MW-92-4 (Duplicate)	MW-92-4
Date Sampled	NA	4/2/97	7/28/97	10/20/97	1/28/98	9/10/98	3/23/99	3/23/99	4/25/00
Elevations - Ground Surface	NA								
- Top of Screen	NA								
- Static Groundwater	NA	21.28	20.31	23.30	23.47	20.24	23.00	23.00	25.73
1,1,1-Trichloroethane ( $\mu\text{g/L}$ )	200	<1	<1	<1	<1	NT	<1	<1	NT
1,1-Dichloroethane ( $\mu\text{g/L}$ )	NA	<1	<1	<1	<1	NT	<1	<1	NT
1,2-Dichloroethane ( $\mu\text{g/L}$ )	5	<0.4	<0.4	<0.4	<0.4	NT	<0.4	<0.4	NT
1,4-Dichlorobenzene ( $\mu\text{g/L}$ )	600	<1	<1	<1	<1	NT	<1	<1	NT
Benzene ( $\mu\text{g/L}$ )	5	<1	<1	<1	<1	NT	<1	<1	NT
Carbon Tetrachloride ( $\mu\text{g/L}$ )	5	<0.3	<0.3	<0.3	<0.3	NT	<0.3	<0.3	NT
Trichloroethylene ( $\mu\text{g/L}$ )	5	<1	<1	<1	<1	NT	<1	<1	<1
Arsenic, dissolved (mg/L)	0.05	<0.001	<0.001	<0.001	0.001	NT	<0.001	<0.001	NT
Barium, dissolved (mg/L)	2	0.042	0.035	0.037	0.04	NT	0.05	0.053	NT
Cadmium, dissolved (mg/L)	0.005	<0.001	<0.001	<0.001	<0.001	NT	<0.001	<0.001	NT
Chromium, dissolved (mg/L)	0.1	<0.03	<0.03	<0.03	<0.03	NT	<0.03	<0.03	NT
Copper, dissolved (mg/L)	1	<0.03	<0.03	<0.03	<0.03	NT	<0.03	<0.03	NT
Iron, dissolved (mg/L)	0.3	<0.03	<0.03	0.046	0.072	0.317	<0.03	<0.03	0.106
Lead, dissolved (mg/L)	0.015	<0.005	<0.005	<0.005	<0.005	NT	<0.005	<0.005	NT
Magnesium, dissolved (mg/L)	NA	34.4	31.9	31.5	29	NT	25.7	25.7	NT
Mercury, dissolved (mg/L)	0.002	<0.0005	<0.0005	<0.0005	<0.0005	NT	<0.0005	<0.0005	NT
Zinc, dissolved (mg/L)	5	0.032	0.046	<0.03	<0.03	NT	<0.03	<0.03	NT
Chemical Oxygen Demand (mg/L)	NA	14	<10	<10	23	14	<10	<10	<10
Chloride (mg/L)	250	53	47	58	80	80.1	52	48	40
Nitrogen, Ammonia (mg/L)	NA	<1	<1	<1	<1	<1	<1	<1	<1
Phenols, total (mg/L)	4	NT	NT	NT	<0.1	NT	<0.1	<0.1	NT
Total Organic Halogens (TOX) (mg/L)	none	NT	NT	NT	0.06	NT	0.11	0.06	NT

NT = Not Tested

**TABLE-5 Continued: GROUNDWATER ANALYTICAL RESULTS (MW-92-4)**

Boring / Well Number	MCL or Action Level	MW-92-4	MW-92-4	MW-92-4	MW-92-4	Mw-92-4	MW-92-4	MW-92-4	MW-92-4
Date Sampled	NA	10/25/00	4/30/01	10/29/01	4/26/02	10/31/02	4/24/03	10/30/03	4/30/04
Elevations - Ground Surface	NA								
- Top of Screen	NA								
- Static Groundwater	NA	25.32	21.70	23.93	24.76	23.80	24.32	24.13	22.61
1,1,1-Trichloroethane ( $\mu\text{g/L}$ )	200	NT	NT	NT	NT	NT	NT	NT	NT
1,1-Dichloroethane ( $\mu\text{g/L}$ )	NA	NT	NT	NT	NT	NT	NT	NT	NT
1,2-Dichloroethane ( $\mu\text{g/L}$ )	5	NT	NT	NT	NT	NT	NT	NT	NT
1,4-Dichlorobenzene ( $\mu\text{g/L}$ )	600	NT	NT	NT	NT	NT	NT	NT	NT
Benzene ( $\mu\text{g/L}$ )	5	NT	NT	NT	NT	NT	NT	NT	NT
Carbon Tetrachloride ( $\mu\text{g/L}$ )	5	NT	NT	NT	NT	NT	NT	NT	NT
Trichloroethylene ( $\mu\text{g/L}$ )	5	<1	<1	<1	<1	<1	<1	<1	<0.3
Arsenic, dissolved (mg/L)	0.05	NT	NT	NT	NT	NT	NT	NT	NT
Barium, dissolved (mg/L)	2	NT	NT	NT	NT	NT	NT	NT	NT
Cadmium, dissolved (mg/L)	0.005	NT	NT	NT	NT	NT	NT	NT	NT
Chromium, dissolved (mg/L)	0.1	NT	NT	NT	NT	NT	NT	NT	NT
Copper, dissolved (mg/L)	1	NT	NT	NT	NT	NT	NT	NT	NT
Iron, dissolved (mg/L)	0.3	<0.03	0.054	0.242	0.049	<0.03	<0.03	<0.03	0.041
Lead, dissolved (mg/L)	0.015	NT	NT	NT	NT	NT	NT	NT	NT
Magnesium, dissolved (mg/L)	NA	NT	NT	NT	NT	NT	NT	NT	NT
Mercury, dissolved (mg/L)	0.002	NT	NT	NT	NT	NT	NT	NT	NT
Zinc, dissolved (mg/L)	5	NT	NT	NT	NT	NT	NT	NT	NT
Chemical Oxygen Demand (mg/L)	NA	<10	<10	<10	<10	20	24	24	15
Chloride (mg/L)	250	58	49	63	75	102	64	117	61
Nitrogen, Ammonia (mg/L)	NA	<1	<1	<1	<1	<1	<1	<1	<1
Phenols, total (mg/L)	4	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT
Total Organic Halogens (TOX) (mg/L)	none	0.07	NT	<0.01	NT	0.024	NT	<0.05	NT

NT = Not Tested

**TABLE-5 Continued: GROUNDWATER ANALYTICAL RESULTS (MW-92-4)**

Boring / Well Number	MCL or Action Level	MW-92-4	MW-92-4	MW-92-4	MW-92-4	Mw-92-4	MW-92-4	MW-92-4	MW-92-4
Date Sampled	NA	10/13/04							
Elevations - Ground Surface	NA								
- Top of Screen	NA								
- Static Groundwater	NA	22.10							
1,1,1-Trichloroethane ( $\mu\text{g/L}$ )	200	NT							
1,1-Dichloroethane ( $\mu\text{g/L}$ )	NA	NT							
1,2-Dichloroethane ( $\mu\text{g/L}$ )	5	NT							
1,4-Dichlorobenzene ( $\mu\text{g/L}$ )	600	NT							
Benzene ( $\mu\text{g/L}$ )	5	NT							
Carbon Tetrachloride ( $\mu\text{g/L}$ )	5	NT							
Trichloroethylene ( $\mu\text{g/L}$ )	5	<0.3							
Arsenic, dissolved (mg/L)	0.05	NT							
Barium, dissolved (mg/L)	2	NT							
Cadmium, dissolved (mg/L)	0.005	NT							
Chromium, dissolved (mg/L)	0.1	NT							
Copper, dissolved (mg/L)	1	NT							
Iron, dissolved (mg/L)	0.3	<0.03							
Lead, dissolved (mg/L)	0.015	NT							
Magnesium, dissolved (mg/L)	NA	NT							
Mercury, dissolved (mg/L)	0.002	NT							
Zinc, dissolved (mg/L)	5	NT							
Chemical Oxygen Demand (mg/L)	NA	<10							
Chloride (mg/L)	250	111							
Nitrogen, Ammonia (mg/L)	NA	<1							
Phenols, total (mg/L)	4	<0.1							
Total Organic Halogens (TOX) (mg/L)	none	0.040							

NT = Not Tested

**TABLE-6: GROUNDWATER ANALYTICAL RESULTS (MW-92-5)**

Boring / Well Number	MCL or Action Level	MW-92-5	MW-92-5	MW-92-5	Duplicate MW-92-5	MW-92-5	MW-92-5	MW-92-5	MW-92-5
Date Sampled	NA	4/2/97	7/28/97	10/20/97	10/20/97	1/28/98	9/10/98	3/23/99	4/25/00
Elevations - Ground Surface	NA								
- Top of Screen	NA								
- Static Groundwater	NA	21.48	20.45	23.40	23.40	23.68	20.46	23.17	25.96
1,1,1-Trichloroethane ( $\mu\text{g/L}$ )	200	<1	<1	<1	<1	<1	NT	<1	NT
1,1-Dichloroethane ( $\mu\text{g/L}$ )	NA	<1	<1	<1	<1	<1	NT	<1	NT
1,2-Dichloroethane ( $\mu\text{g/L}$ )	5	<0.4	<0.4	<0.4	<0.4	<0.4	NT	<0.4	NT
1,4-Dichlorobenzene ( $\mu\text{g/L}$ )	600	<1	<1	<1	<1	<1	NT	<1	NT
Benzene ( $\mu\text{g/L}$ )	5	<1	<1	<1	<1	<1	NT	<1	NT
Carbon Tetrachloride ( $\mu\text{g/L}$ )	5	<0.3	<0.3	<0.3	<0.3	<0.3	NT	<0.3	NT
Trichloroethylene ( $\mu\text{g/L}$ )	5	<1	<1	<1	<1	<1	NT	<1	<1
Arsenic, dissolved (mg/L)	0.05	<0.001	<0.001	<0.001	<0.001	<0.001	NT	<0.001	NT
Barium, dissolved (mg/L)	2	0.09	0.073	0.09	0.09	0.104	NT	0.19	NT
Cadmium, dissolved (mg/L)	0.005	<0.001	0.002	<0.001	<0.001	<0.001	NT	<0.001	NT
Chromium, dissolved (mg/L)	0.1	<0.03	<0.03	<0.03	<0.03	<0.03	NT	<0.03	NT
Copper, dissolved (mg/L)	1	<0.03	<0.03	<0.03	<0.03	<0.03	NT	<0.03	NT
Iron, dissolved (mg/L)	0.3	8.14	<0.03	6.65	6.54	9.06	8.5	7.86	3.2
Lead, dissolved (mg/L)	0.015	<0.005	<0.005	<0.005	<0.005	<0.005	NT	<0.005	NT
Magnesium, dissolved (mg/L)	NA	49	47.6	47.6	46.8	50	NT	47.4	NT
Mercury, dissolved (mg/L)	0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	NT	<0.0005	NT
Zinc, dissolved (mg/L)	5	<0.03	0.083	<0.03	0.032	<0.03	NT	<0.03	NT
Chemical Oxygen Demand (mg/L)	NA	<10	<10	<10	<10	<10	<10	<10	<10
Chloride (mg/L)	250	69	75	78	78	85	75	64	58
Nitrogen, Ammonia (mg/L)	NA	<1	<1	<1	<1	<1	NT	<1	<1
Phenols, total (mg/L)	4	NT	NT	NT	NT	<0.1	NT	<0.1	NT
Total Organic Halogens (TOX) (mg/L)	none	NT	NT	NT	NT	<0.01	NT	0.02	NT

NT = Not Tested

**TABLE-6 Continued: GROUNDWATER ANALYTICAL RESULTS (MW-92-5)**

Boring / Well Number	MCL or Action Level	MW-92-5	MW-92-5	MW-92-5	MW-92-5	MW-92-5	MW-92-5	MW-92-5	MW-92-5
Date Sampled	NA	10/25/00	4/30/01	10/29/01	4/26/02	10/31/02	4/24/03	10/30/03	4/30/04
Elevations - Ground Surface	NA								
- Top of Screen	NA								
- Static Groundwater	NA	25.55	21.94	24.18	25.00	24.03	24.63	24.39	22.79
1,1,1-Trichloroethane ( $\mu\text{g/L}$ )	200	NT	NT	NT	NT	NT	NT	NT	NT
1,1-Dichloroethane ( $\mu\text{g/L}$ )	NA	NT	NT	NT	NT	NT	NT	NT	NT
1,2-Dichloroethane ( $\mu\text{g/L}$ )	5	NT	NT	NT	NT	NT	NT	NT	NT
1,4-Dichlorobenzene ( $\mu\text{g/L}$ )	600	NT	NT	NT	NT	NT	NT	NT	NT
Benzene ( $\mu\text{g/L}$ )	5	NT	NT	NT	NT	NT	NT	NT	NT
Carbon Tetrachloride ( $\mu\text{g/L}$ )	5	NT	NT	NT	NT	NT	NT	NT	NT
Trichloroethylene ( $\mu\text{g/L}$ )	5	<1	<1	<1	<1	<1	<1	<1	<0.3
Arsenic, dissolved (mg/L)	0.05	NT	NT	NT	NT	NT	NT	NT	NT
Barium, dissolved (mg/L)	2	NT	NT	NT	NT	NT	NT	NT	NT
Cadmium, dissolved (mg/L)	0.005	NT	NT	NT	NT	NT	NT	NT	NT
Chromium, dissolved (mg/L)	0.1	NT	NT	NT	NT	NT	NT	NT	NT
Copper, dissolved (mg/L)	1	NT	NT	NT	NT	NT	NT	NT	NT
Iron, dissolved (mg/L)	0.3	7.32	7.62	7.72	7.13	3.10	0.824	<0.03	5.95
Lead, dissolved (mg/L)	0.015	NT	NT	NT	NT	NT	NT	NT	NT
Magnesium, dissolved (mg/L)	NA	NT	NT	NT	NT	NT	NT	NT	NT
Mercury, dissolved (mg/L)	0.002	NT	NT	NT	NT	NT	NT	NT	NT
Zinc, dissolved (mg/L)	5	NT	NT	NT	NT	NT	NT	NT	NT
Chemical Oxygen Demand (mg/L)	NA	<10	<10	<10	<10	11	<10	<10	16
Chloride (mg/L)	250	63	68	74	61	69	71	66	68
Nitrogen, Ammonia (mg/L)	NA	<1	<1	<1	<1	<1	<1	<1	<1
Phenols, total (mg/L)	4	<0.1	NT	<0.1	NT	<0.1	NT	<0.1	NT
Total Organic Halogens (TOX) (mg/L)	none	0.02	NT	<0.010	NT	0.021	NT	0.108	NT

NT = Not Tested

**TABLE-6 Continued: GROUNDWATER ANALYTICAL RESULTS (MW-92-5)**

Boring / Well Number	MCL or Action Level	MW-92-5	MW-92-5	MW-92-5	MW-92-5	MW-92-5	MW-92-5	MW-92-5	MW-92-5
Date Sampled	NA	10/13/04							
Elevations - Ground Surface	NA								
- Top of Screen	NA								
- Static Groundwater	NA	22.34							
1,1,1-Trichloroethane ( $\mu\text{g/L}$ )	200	NT							
1,1-Dichloroethane ( $\mu\text{g/L}$ )	NA	NT							
1,2-Dichloroethane ( $\mu\text{g/L}$ )	5	NT							
1,4-Dichlorobenzene ( $\mu\text{g/L}$ )	600	NT							
Benzene ( $\mu\text{g/L}$ )	5	NT							
Carbon Tetrachloride ( $\mu\text{g/L}$ )	5	NT							
Trichloroethylene ( $\mu\text{g/L}$ )	5	<0.3							
Arsenic, dissolved (mg/L)	0.05	NT							
Barium, dissolved (mg/L)	2	NT							
Cadmium, dissolved (mg/L)	0.005	NT							
Chromium, dissolved (mg/L)	0.1	NT							
Copper, dissolved (mg/L)	1	NT							
Iron, dissolved (mg/L)	0.3	<0.03							
Lead, dissolved (mg/L)	0.015	NT							
Magnesium, dissolved (mg/L)	NA	NT							
Mercury, dissolved (mg/L)	0.002	NT							
Zinc, dissolved (mg/L)	5	NT							
Chemical Oxygen Demand (mg/L)	NA	<10							
Chloride (mg/L)	250	68							
Nitrogen, Ammonia (mg/L)	NA	<1							
Phenols, total (mg/L)	4	<0.1							
Total Organic Halogens (TOX) (mg/L)	none	0.019							

NT = Not Tested

**TABLE-7: GROUNDWATER ANALYTICAL DATA (MW-92-6)**

Boring / Well Number	MCL or Action Level	MW-92-6	MW-92-6	MW-92-6	MW-92-6	MW-92-6	MW-92-6	MW-92-6	MW-92-6
Date Sampled	NA	4/2/97	7/28/97	10/20/97	1/28/98	9/10/98	3/23/99	4/25/00	10/25/00
Elevations - Ground Surface	NA								
- Top of Screen	NA								
- Static Groundwater	NA	20.22	19.12	21.05	22.30	17.61	21.74	27.96	27.47
1,1,1-Trichloroethane ( $\mu\text{g/L}$ )	200	<1	<1	<1	<1	NT	<1	NT	NT
1,1-Dichloroethane ( $\mu\text{g/L}$ )	NA	<1	<1	<1	<1	NT	<1	NT	NT
1,2-Dichloroethane ( $\mu\text{g/L}$ )	5.	<0.4	<0.4	<0.4	<0.4	NT	<0.4	NT	NT
1,4-Dichlorobenzene ( $\mu\text{g/L}$ )	600	<1	<1	<1	<1	NT	<1	NT	NT
Benzene ( $\mu\text{g/L}$ )	5	<1	<1	<1	<1	NT	<1	NT	NT
Carbon Tetrachloride ( $\mu\text{g/L}$ )	5	<0.3	<0.3	<0.3	<0.3	NT	<0.3	NT	NT
Trichloroethylene ( $\mu\text{g/L}$ )	5	<1	<1	<1	<1	NT	<1	<1	<1
Arsenic, dissolved (mg/L)	0.05	0.001	0.009	0.014	0.005	NT	<0.001	NT	NT
Barium, dissolved (mg/L)	2	0.075	0.034	0.03	0.069	NT	0.098	NT	NT
Cadmium, dissolved (mg/L)	0.005	<0.001	<0.001	<0.001	<0.001	NT	<0.001	NT	NT
Chromium, dissolved (mg/L)	0.1	<0.03	<0.03	<0.03	<0.03	NT	<0.03	NT	NT
Copper, dissolved (mg/L)	1	<0.03	<0.03	<0.03	<0.03	NT	<0.03	NT	NT
Iron, dissolved (mg/L)	0.3	<0.03	0.179	0.235	0.113	4.12	<0.03	0.051	0.358
Lead, dissolved (mg/L)	0.015	<0.005	<0.005	<0.005	<0.005	NT	<0.005	NT	NT
Magnesium, dissolved (mg/L)	NA	30.7	14	2.23	7.3	NT	27.9	NT	NT
Mercury, dissolved (mg/L)	0.002	<0.0005	<0.0005	<0.0005	<0.0005	NT	<0.0005	NT	NT
Zinc, dissolved (mg/L)	5	<0.03	0.031	<0.03	<0.03	NT	<0.03	NT	NT
Chemical Oxygen Demand (mg/L)	NA	15	<10	36	26	<10	19.4	<10	22
Chloride (mg/L)	250	91	88	155	142	54	100	120	119
Nitrogen, Ammonia (mg/L)	NA	<1	<1	3.2	1.1	<1	<1	<1	<1
Phenols, total (mg/L)	4	NT	NT	NT	<0.1	NT	<0.1	NT	<0.1
Total Organic Halogens (TOX) (mg/L)	none	NT	NT	NT	0.02	NT	<0.01	NT	0.04

NT = Not Tested

**TABLE-7 Continued: GROUNDWATER ANALYTICAL DATA (MW-92-6)**

Boring / Well Number	MCL or Action Level	MW-92-6	MW-92-6	MW-92-6	MW-92-6	MW-92-6 Duplicate	MW-92-6	MW-92-6	MW-92-6
Date Sampled	NA	4/30/01	10/29/01	4/26/02	10/31/02	10/31/02	4/24/03	10/30/03	4/30/04
Elevations - Ground Surface	NA								
- Top of Screen	NA								
- Static Groundwater	NA	23.90	27.32	26.94	25.96	25.96	26.54	26.31	24.65
1,1,1-Trichloroethane ( $\mu\text{g/L}$ )	200	NT	NT	NT	NT	NT	NT	NT	NT
1,1-Dichloroethane ( $\mu\text{g/L}$ )	NA	NT	NT	NT	NT	NT	NT	NT	NT
1,2-Dichloroethane ( $\mu\text{g/L}$ )	5	NT	NT	NT	NT	NT	NT	NT	NT
1,4-Dichlorobenzene ( $\mu\text{g/L}$ )	600	NT	NT	NT	NT	NT	NT	NT	NT
Benzene ( $\mu\text{g/L}$ )	5	NT	NT	NT	NT	NT	NT	NT	NT
Carbon Tetrachloride ( $\mu\text{g/L}$ )	5	NT	NT	NT	NT	NT	NT	NT	NT
Trichloroethylene ( $\mu\text{g/L}$ )	5	<1	<1	<1	<1	<1	<1	<1	<0.3
Arsenic, dissolved (mg/L)	0.05	NT	NT	NT	NT	NT	NT	NT	NT
Barium, dissolved (mg/L)	2	NT	NT	NT	NT	NT	NT	NT	NT
Cadmium, dissolved (mg/L)	0.005	NT	NT	NT	NT	NT	NT	NT	NT
Chromium, dissolved (mg/L)	0.1	NT	NT	NT	NT	NT	NT	NT	NT
Copper, dissolved (mg/L)	1	NT	NT	NT	NT	NT	NT	NT	NT
Iron, dissolved (mg/L)	0.3	0.247	0.069	0.154	0.199	0.159	0.933	0.075	0.053
Lead, dissolved (mg/L)	0.015	NT	NT	NT	NT	NT	NT	NT	NT
Magnesium, dissolved (mg/L)	NA	NT	NT	NT	NT	NT	NT	NT	NT
Mercury, dissolved (mg/L)	0.002	NT	NT	NT	NT	NT	NT	NT	NT
Zinc, dissolved (mg/L)	5	NT	NT	NT	NT	NT	NT	NT	NT
Chemical Oxygen Demand (mg/L)	NA	12	<10	15	14	21	15	14	19
Chloride (mg/L)	250	135	117	110	126	127	129	113	115
Nitrogen, Ammonia (mg/L)	NA	<1	<1	<1	<1	<1	<1	<1	<1
Phenols, total (mg/L)	4	NT	<0.1	NT	<0.1	<0.1	NT	<0.1	NT
Total Organic Halogens (TOX) (mg/L)	none	NT	<0.01	NT	0.023	0.033	NT	<0.01	NT

NT = Not Tested

**TABLE-7 Continued: GROUNDWATER ANALYTICAL DATA (MW-92-6)**

Boring / Well Number	MCL or Action Level	MW-92-6	MW-92-6	MW-92-6	MW-92-6	MW-92-6 Duplicate	MW-92-6	MW-92-6	MW-92-6
Date Sampled	NA	10/13/04							
Elevations - Ground Surface	NA								
- Top of Screen	NA								
- Static Groundwater	NA	24.29							
1,1,1-Trichloroethane ( $\mu\text{g/L}$ )	200	NT							
1,1-Dichloroethane ( $\mu\text{g/L}$ )	NA	NT							
1,2-Dichloroethane ( $\mu\text{g/L}$ )	5	NT							
1,4-Dichlorobenzene ( $\mu\text{g/L}$ )	600	NT							
Benzene ( $\mu\text{g/L}$ )	5	NT							
Carbon Tetrachloride ( $\mu\text{g/L}$ )	5	NT							
Trichloroethylene ( $\mu\text{g/L}$ )	5	<0.3							
Arsenic, dissolved (mg/L)	0.05	NT							
Barium, dissolved (mg/L)	2	NT							
Cadmium, dissolved (mg/L)	0.005	NT							
Chromium, dissolved (mg/L)	0.1	NT							
Copper, dissolved (mg/L)	1	NT							
Iron, dissolved (mg/L)	0.3	0.068							
Lead, dissolved (mg/L)	0.015	NT							
Magnesium, dissolved (mg/L)	NA	NT							
Mercury, dissolved (mg/L)	0.002	NT							
Zinc, dissolved (mg/L)	5	NT							
Chemical Oxygen Demand (mg/L)	NA	13							
Chloride (mg/L)	250	123							
Nitrogen, Ammonia (mg/L)	NA	<1							
Phenols, total (mg/L)	4	<0.1							
Total Organic Halogens (TOX) (mg/L)	none	0.042							

NT = Not Tested

**TABLE-8: GROUNDWATER ANALYTICAL RESULTS (MW-92-7)**

Boring / Well Number	MCL or Action Level	MW-92-7	Duplicate MW-92-7	MW-92-7	MW-92-7	MW-92-7	MW-92-7 (duplicate)	MW-92-7	MW-92-7
Date Sampled	NA	4/2/97	4/2/97	7/28/97	10/20/97	1/28/98	1/28/98	9/10/98	3/23/99
Elevations - Ground Surface	NA								
- Top of Screen	NA								
- Static Groundwater	NA	22.2	22.2	19.20	22.15	22.36	22.36	19.16	21.92
1,1,1-Trichloroethane ( $\mu\text{g/L}$ )	200	<1	<1	<1	<1	<1	<1	NT	<1
1,1-Dichloroethane ( $\mu\text{g/L}$ )	NA	<1	<1	<1	<1	<1	<1	NT	<1
1,2-Dichloroethane ( $\mu\text{g/L}$ )	5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	NT	<0.4
1,4-Dichlorobenzene ( $\mu\text{g/L}$ )	600	<1	<1	<1	<1	<1	<1	NT	<1
Benzene ( $\mu\text{g/L}$ )	5	<1	<1	<1	<1	<1	<1	NT	<1
Carbon Tetrachloride ( $\mu\text{g/L}$ )	5	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	NT	<0.3
Trichloroethylene ( $\mu\text{g/L}$ )	5	<1	<1	<1	<1	<1	<1	NT	<1
Arsenic, dissolved (mg/L)	0.05	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	NT	<0.001
Barium, dissolved (mg/L)	2	0.15	0.149	0.088	0.12	0.163	0.167	NT	0.164
Cadmium, dissolved (mg/L)	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NT	<0.001
Chromium, dissolved (mg/L)	0.1	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	NT	<0.03
Copper, dissolved (mg/L)	1	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	NT	<0.03
Iron, dissolved (mg/L)	0.3	7.51	7.54	0.036	0.059	8.11	8.27	4.12	6.52
Lead, dissolved (mg/L)	0.015	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NT	<0.005
Magnesium, dissolved (mg/L)	NA	57	56.8	32.5	43.8	60	61	NT	55.7
Mercury, dissolved (mg/L)	0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	NT	<0.0005
Zinc, dissolved (mg/L)	5	<0.03	0.03	0.072	<0.03	<0.03	<0.03	NT	<0.03
Chemical Oxygen Demand (mg/L)	NA	19	18	<10	<10	<10	<10	<10	<10
Chloride (mg/L)	250	51	51	98	72	21	50	54	57
Nitrogen, Ammonia (mg/L)	NA	<1	<1	<1	<1	<1	<1	<1	<1
Phenols, total (mg/L)	4	NT	NT	NT	NT	<0.1	<0.1	NT	<0.1
Total Organic Halogens (TOX) (mg/L)	none	NT	NT	NT	NT	0.02	0.01	NT	0.03

NT = Not Tested

**TABLE-8 Continued: GROUNDWATER ANALYTICAL RESULTS (MW-92-7)**

Boring / Well Number	MCL or Action Level	MW-92-7	MW-92-7	MW-92-7	MW-92-7	MW-92-7	MW-92-7	MW-92-7	MW-92-7
Date Sampled	NA	4/25/00	10/25/00	4/30/01	10/29/01	4/26/02	10/31/02	4/24/03	10/30/03
Elevations - Ground Surface	NA								
- Top of Screen	NA								
- Static Groundwater	NA	28.15	27.66	24.00	26.28	27.10	26.10	26.70	26.49
1,1,1-Trichloroethane ( $\mu\text{g/L}$ )	200	NT	NT	NT	NT	NT	NT	NT	NT
1,1-Dichloroethane ( $\mu\text{g/L}$ )	NA	NT	NT	NT	NT	NT	NT	NT	NT
1,2-Dichloroethane ( $\mu\text{g/L}$ )	5	NT	NT	NT	NT	NT	NT	NT	NT
1,4-Dichlorobenzene ( $\mu\text{g/L}$ )	600	NT	NT	NT	NT	NT	NT	NT	NT
Benzene ( $\mu\text{g/L}$ )	5	NT	NT	NT	NT	NT	NT	NT	NT
Carbon Tetrachloride ( $\mu\text{g/L}$ )	5	NT	NT	NT	NT	NT	NT	NT	NT
Trichloroethylene ( $\mu\text{g/L}$ )	5	<1	<1	<1	<1	<1	<1	<1	<1
Arsenic, dissolved (mg/L)	0.05	NT	NT	NT	NT	NT	NT	NT	NT
Barium, dissolved (mg/L)	2	NT	NT	NT	NT	NT	NT	NT	NT
Cadmium, dissolved (mg/L)	0.005	NT	NT	NT	NT	NT	NT	NT	NT
Chromium, dissolved (mg/L)	0.1	NT	NT	NT	NT	NT	NT	NT	NT
Copper, dissolved (mg/L)	1	NT	NT	NT	NT	NT	NT	NT	NT
Iron, dissolved (mg/L)	0.3	3.23	6.82	7.24	8.21	6.33	5.24	6.24	5.96
Lead, dissolved (mg/L)	0.015	NT	NT	NT	NT	NT	NT	NT	NT
Magnesium, dissolved (mg/L)	NA	NT	NT	NT	NT	NT	NT	NT	NT
Mercury, dissolved (mg/L)	0.002	NT	NT	NT	NT	NT	NT	NT	NT
Zinc, dissolved (mg/L)	5	NT	NT	NT	NT	NT	NT	NT	NT
Chemical Oxygen Demand (mg/L)	NA	<10	<10	<10	14	11	14	25	12
Chloride (mg/L)	250	41	46	39	52	52	58	58	51
Nitrogen, Ammonia (mg/L)	NA	<1	<1	<1	<1	<1	<1	<1	<1
Phenols, total (mg/L)	4	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1
Total Organic Halogens (TOX) (mg/L)	none	NT	0.01	NT	0.016	NT	0.022	NT	0.023

NT = Not Tested

**TABLE-8 Continued: GROUNDWATER ANALYTICAL RESULTS (MW-92-7)**

Boring / Well Number	MCL or Action Level	MW-92-7	MW-92-7	MW-92-7	MW-92-7	MW-92-7	MW-92-7	MW-92-7	MW-92-7
Date Sampled	NA	4/30/04	10/13/04						
Elevations - Ground Surface	NA								
- Top of Screen	NA								
- Static Groundwater	NA	24.87	24.43						
1,1,1-Trichloroethane ( $\mu\text{g/L}$ )	200	NT	NT						
1,1-Dichloroethane ( $\mu\text{g/L}$ )	NA	NT	NT						
1,2-Dichloroethane ( $\mu\text{g/L}$ )	5	NT	NT						
1,4-Dichlorobenzene ( $\mu\text{g/L}$ )	600	NT	NT						
Benzene ( $\mu\text{g/L}$ )	5	NT	NT						
Carbon Tetrachloride ( $\mu\text{g/L}$ )	5	NT	NT						
Trichloroethylene ( $\mu\text{g/L}$ )	5	<0.3	<0.3						
Arsenic, dissolved (mg/L)	0.05	NT	NT						
Barium, dissolved (mg/L)	2	NT	NT						
Cadmium, dissolved (mg/L)	0.005	NT	NT						
Chromium, dissolved (mg/L)	0.1	NT	NT						
Copper, dissolved (mg/L)	1	NT	NT						
Iron, dissolved (mg/L)	0.3	1.25	6.33						
Lead, dissolved (mg/L)	0.015	NT	NT						
Magnesium, dissolved (mg/L)	NA	NT	NT						
Mercury, dissolved (mg/L)	0.002	NT	NT						
Zinc, dissolved (mg/L)	5	NT	NT						
Chemical Oxygen Demand (mg/L)	NA	20	<10						
Chloride (mg/L)	250	53	49						
Nitrogen, Ammonia (mg/L)	NA	<1	<1						
Phenols, total (mg/L)	4	NT	<0.1						
Total Organic Halogens (TOX) (mg/L)	none	NT	0.022						

NT = Not Tested

**TABLE-9: GROUNDWATER ANALYTICAL RESULTS (SURFACE WATER BODY)**

Boring / Well Number	MCL or Action Level	SW-1	SW-1	SW-1	SW-1	SW-1	SW-1	SW-1	SW-1
Date Sampled	NA	4/2/97	7/28/97	10/20/97	1/28/98	9/10/98	3/23/99	4/25/00	10/25/00
Elevations - Ground Surface	NA								
- Top of Screen	NA								
- Static Groundwater	NA								
1,1,1-Trichloroethane ( $\mu\text{g/L}$ )	200	<1	<1	<1	<1	NT	<1	NT	NT
1,1-Dichloroethane ( $\mu\text{g/L}$ )	NA	<1	<1	<1	<1	NT	<1	NT	NT
1,2-Dichloroethane ( $\mu\text{g/L}$ )	5	<0.4	<0.4	<0.4	<0.4	NT	<0.4	NT	NT
1,4-Dichlorobenzene ( $\mu\text{g/L}$ )	600	<1	<1	<1	<1	NT	<1	NT	NT
Benzene ( $\mu\text{g/L}$ )	5	<1	<1	<1	<1	NT	<1	NT	NT
Carbon Tetrachloride ( $\mu\text{g/L}$ )	5	<0.3	<0.3	<0.3	<0.3	NT	<0.3	NT	NT
Trichloroethylene ( $\mu\text{g/L}$ )	5	<1	<1	<1	<1	NT	<1	<1	<1
Arsenic, dissolved (mg/L)	0.05	0.0013	0.002	0.0029	0.003	NT	<0.001	NT	NT
Barium, dissolved (mg/L)	2	0.11	0.05	0.099	0.076	NT	0.048	NT	NT
Cadmium, dissolved (mg/L)	0.005	<0.001	<0.001	<0.001	<0.001	NT	0.004	NT	NT
Chromium, dissolved (mg/L)	0.1	<0.03	<0.03	<0.03	<0.03	NT	<0.03	NT	NT
Copper, dissolved (mg/L)	1	<0.03	<0.03	<0.03	<0.03	NT	<0.03	NT	NT
Iron, dissolved (mg/L)	0.3	0.033	0.035	<0.03	<0.035	<0.03	0.052	<0.03	<0.03
Lead, dissolved (mg/L)	0.015	<0.005	<0.005	<0.005	<0.005	NT	<0.005	NT	NT
Magnesium, dissolved (mg/L)	NA	0.68	4	0.25	0.3	NT	2.06	NT	NT
Mercury, dissolved (mg/L)	0.002	<0.0005	<0.0005	<0.0005	<0.0005	NT	<0.0005	NT	NT
Zinc, dissolved (mg/L)	5	<0.03	0.031	0.033	<0.03	NT	<0.03	NT	NT
Chemical Oxygen Demand (mg/L)	NA	27	21	11	27	<10	10.5	<10	18
Chloride (mg/L)	250	54	52	51	56	47.5	51	46	41
Nitrogen, Ammonia (mg/L)	NA	<1	<1	<1	<1	<1	<1	<1	<1
Phenols, total (mg/L)	4	NT	NT	NT	<0.1	NT	<0.1	NT	<0.1
Total Organic Halogens (TOX) (mg/L)	none	NT	NT	NT	0.02	NT	0.02	NT	0.02

NT = Not Tested

**TABLE-9 Continued: GROUNDWATER ANALYTICAL RESULTS (SURFACE WATER BODY)**

Boring / Well Number	MCL or Action Level	SW-1	SW-1	SW-1	SW-1	SW-1	SW-1	SW-1	SW-1
Date Sampled	NA	4/30/01	10/29/01	4/26/02	10/31/02	4/24/03	10/30/03	4/30/04	10/13/04
Elevations - Ground Surface	NA								
- Top of Screen	NA								
- Static Groundwater	NA								
1,1,1-Trichloroethane ( $\mu\text{g/L}$ )	200	NT	NT	NT	NT	NT	NT	NT	NT
1,1-Dichloroethane ( $\mu\text{g/L}$ )	NA	NT	NT	NT	NT	NT	NT	NT	NT
1,2-Dichloroethane ( $\mu\text{g/L}$ )	5	NT	NT	NT	NT	NT	NT	NT	NT
1,4-Dichlorobenzene ( $\mu\text{g/L}$ )	600	NT	NT	NT	NT	NT	NT	NT	NT
Benzene ( $\mu\text{g/L}$ )	5	NT	NT	NT	NT	NT	NT	NT	NT
Carbon Tetrachloride ( $\mu\text{g/L}$ )	5	NT	NT	NT	NT	NT	NT	NT	NT
Trichloroethylene ( $\mu\text{g/L}$ )	5	<1	<1	<1	<1	<1	<1	<0.3	<0.3
Arsenic, dissolved (mg/L)	0.05	NT	NT	NT	NT	NT	NT	NT	NT
Barium, dissolved (mg/L)	2	NT	NT	NT	NT	NT	NT	NT	NT
Cadmium, dissolved (mg/L)	0.005	NT	NT	NT	NT	NT	NT	NT	NT
Chromium, dissolved (mg/L)	0.1	NT	NT	NT	NT	NT	NT	NT	NT
Copper, dissolved (mg/L)	1	NT	NT	NT	NT	NT	NT	NT	NT
Iron, dissolved (mg/L)	0.3	<0.03	<0.03	<0.03	0.032	<0.03	<0.03	<0.03	<0.03
Lead, dissolved (mg/L)	0.015	NT	NT	NT	NT	NT	NT	NT	NT
Magnesium, dissolved (mg/L)	NA	NT	NT	NT	NT	NT	NT	NT	NT
Mercury, dissolved (mg/L)	0.002	NT	NT	NT	NT	NT	NT	NT	NT
Zinc, dissolved (mg/L)	5	NT	NT	NT	NT	NT	NT	NT	NT
Chemical Oxygen Demand (mg/L)	NA	<10	<10	11	23	29	15	26	<10
Chloride (mg/L)	250	<10	48	44	45	51	47	49	49
Nitrogen, Ammonia (mg/L)	NA	<1	<1	<1	<1	<1	<1	<1	<1
Phenols, total (mg/L)	4	NT	<0.1	NT	<0.1	NT	<0.1	NT	<0.1
Total Organic Halogens (TOX) (mg/L)	none	NT	<0.010	NT	0.015	NT	<0.01	NT	<0.01

NT = Not Tested

**TABLE-10: GROUNDWATER ANALYTICAL RESULTS (TRIP BLANK)**

Boring / Well Number	MCL or Action Level	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank
Date Sampled	NA	4/2/97	7/28/97	10/20/97	1/28/98	9/10/98	3/23/99	4/25/00	10/25/00
Elevations - Ground Surface	NA				Not Collected		Not Collected		Not Collected
- Top of Screen	NA								
- Static Groundwater	NA								
1,1,1-Trichloroethane ( $\mu\text{g/L}$ )	200	<1	<1	<1		NT		<1	
1,1-Dichloroethane ( $\mu\text{g/L}$ )	NA	<1	<1	<1		NT		<1	
1,2-Dichloroethane ( $\mu\text{g/L}$ )	5	<0.4	<0.4	<0.4		NT		<0.4	
1,4-Dichlorobenzene ( $\mu\text{g/L}$ )	600	<1	<1	<1		NT		<1	
Benzene ( $\mu\text{g/L}$ )	5	<1	<1	<1		NT		<1	
Carbon Tetrachloride ( $\mu\text{g/L}$ )	5	<0.3	<0.3	<0.3		NT		<0.3	
Trichloroethylene ( $\mu\text{g/L}$ )	5	<1	<1	<1		NT		<1	
Arsenic, dissolved (mg/L)	0.05	<0.001	<0.001	<0.001		NT		<0.001	
Barium, dissolved (mg/L)	2	<0.01	<0.01	<0.01		NT		<0.01	
Cadmium, dissolved (mg/L)	0.005	<0.001	<0.001	<0.001		NT		<0.001	
Chromium, dissolved (mg/L)	0.1	<0.03	<0.03	<0.03		NT		<0.03	
Copper, dissolved (mg/L)	1	<0.03	<0.03	<0.03		NT		<0.03	
Iron, dissolved (mg/L)	0.3	<0.03	<0.03	<0.03		<0.03		<0.03	
Lead, dissolved (mg/L)	0.015	<0.005	<0.005	<0.005		NT		<0.005	
Magnesium, dissolved (mg/L)	NA	<0.1	<0.1	<0.1		NT		<0.1	
Mercury, dissolved (mg/L)	0.002	<0.0005	<0.0005	<0.0005		NT		<0.0005	
Zinc, dissolved (mg/L)	5	<0.03	<0.03	<0.03		NT		<0.03	
Chemical Oxygen Demand (mg/L)	NA	<10	<10	<10		<10		<10	
Chloride (mg/L)	250	<10	<10	<10		<10		<10	
Nitrogen, Ammonia (mg/L)	NA	<1	<1	<1		<1		<1	
Phenols, total (mg/L)	4	NT	NT	NT		NT		<0.1	
Total Organic Halogens (TOX) (mg/L)	None	NT	NT	NT		NT		<0.001	

NT = Not Tested

**TABLE-11: STATIC GROUNDWATER LEVELS**

Boring / Well Number	Static Water Levels	Static Water Level								
Date	4/2/97	5/12/97	6/30/97	7/28/97	8/19/97	9/8/97	10/20/97	11/97	12/1/97	1/28/98
MW-92-1	18.13	16.98	17.03	16.55	17.00	17.78	18.88	Not taken	19.05	19.28
MW-92-2	18.80	17.69	17.81	17.07	17.70	18.46	19.57	Not taken	19.73	19.98
MW-92-3	NA	Not taken	NA	NA						
MW-92-4	21.28	20.06	20.63	20.31	21.20	22.09	23.30	Not taken	23.44	23.47
MW-92-5	21.48	20.26	20.81	20.45	21.40	22.34	23.40	Not taken	23.60	23.68
MW-92-6	20.22	19.06	19.52	19.12	19.99	20.94	21.05	Not taken	22.20	22.30
MW-92-7	22.20	19.05	19.89	19.20	20.09	21.02	22.15	Not taken	22.35	22.36
L-1	Dry	Not taken	Dry	Dry						
L-2	Dry	Not taken	Dry	Dry						

Boring / Well Number	Static Water Levels	Static Water Level								
Date	9/10/98	3/23/99	4/25/00	7/31/00	10/25/00	1/12/01	2/12/01	3/29/01	4/30/01	5/25/01
MW-92-1	15.57	19.06	21.53	NA	21.06	NA	NA	NA	19.04	NA
MW-92-1R	NA	NA	19.54	18.53	19.96	15.17	14.1	13.82	12.34	12.20
MW-92-2	16.24	19.76	22.20	20.49	21.75	NA	NA	NA	19.71	NA
MW-92-3	NA	NA	20.10	18.03	23.45	23.66	23.08	21.63	20.00	19.84
MW-92-4	20.24	23.00	25.73	NA	25.32	NA	NA	NA	21.70	NA
MW-92-5	20.46	23.17	25.96	NA	25.55	NA	NA	NA	21.94	NA
MW-92-6	17.61	21.74	27.96	NA	27.47	NA	NA	NA	23.90	NA
MW-92-7	19.16	21.92	28.15	NA	27.66	NA	NA	NA	24.00	NA
L-1	Dry	NA	Dry	NA	Dry	NA	NA	NA	NA	NA
L-2	Dry	NA	Dry	NA	Dry	NA	NA	NA	NA	NA

NA = Not Available

**TABLE 11 Continued: STATIC GROUNDWATER LEVELS**

Boring / Well Number	Static Water Levels	Static Water Level								
Date	6/30/01	7/31/01	8/31/01	9/29/01	10/29/01	11/30/01	12/31/01	1/31/02	4/26/02	10/31/02
MW-92-1	NA	NA	NA	NA	19.57	NA	NA	NA	20.85	19.70
MW-92-1R	11.11	10.58	11.69	12.59	13.23	13.85	14.06	14.44	14.42	13.27
MW-92-2	NA	NA	NA	NA	20.25	NA	NA	NA	21.51	20.51
MW-92-3	19.21	18.87	20.36	21.41	22.04	22.59	22.65	23.05	22.89	21.89
MW-92-4	NA	NA	NA	NA	23.93	NA	NA	NA	24.76	23.80
MW-92-5	NA	NA	NA	NA	24.18	NA	NA	NA	25.00	24.03
MW-92-6	NA	NA	NA	NA	27.32	NA	NA	NA	26.94	25.96
MW-92-7	NA	NA	NA	NA	26.28	NA	NA	NA	27.10	26.10
L-1	NA	NA								
L-2	NA	NA								

NA = Not Available

**TABLE 11 Continued: STATIC GROUNDWATER LEVELS**

Boring / Well Number	Static Water Levels	Static Water Level								
Date	4/24/03	10/30/03	4/30/04	10/13/04						
MW-92-1	20.69	20.02	18.95	18.17						
MW-92-1R	14.15	13.65	12.38	11.65						
MW-92-2	21.37	20.69	19.63	18.78						
MW-92-3	22.54	22.29	20.77	20.27						
MW-92-4	24.32	24.13	22.61	22.10						
MW-92-5	24.63	24.39	22.79	22.34						
MW-92-6	26.54	26.31	24.65	24.29						
MW-92-7	26.70	26.49	24.87	24.43						
L-1	NA	NA	Dry	Dry						
L-2	NA	NA	Dry	Dry						

NA = Not Available

**TABLE 12: UPPER AQUIFER (Monitoring wells are shallow): Upgradient Mean + 2(Standard Deviation)**

Chemical	Upgradient Mean + 2(standard deviation)	Date of exceedence(s)	Monitoring well concentration (mg/L)	
			MW-92-4	MW-92-6
Zinc	0.030	4/97	0.032	
		7/97	0.046	0.031
Chloride	53.55	4/97		61
		7/97		88
		10/97	58	155
		1/98	80	142
		9/98		
		3/99		100
		4/00		120
		10/00	58	119
		4/01		135
		10/01	63	117
		4/02	75	126
		10/02	102	127
		4/03	64	129
		10/03	117	113
		4/04	61	115
		10/04	115	123
Nitrogen, Ammonia	1.51	10/97		3.2
Iron, Dissolved	0.26	9/98		4.12
		10/00		0.358
		4/03		0.933
Chemical O <sub>2</sub> Demand	14.60	4/97		15
		10/97		36
		1/98	23	26
		9/98	14	
		3/99		19.4
		10/00		22
		4/01		12
		4/02		14
		10/02	20	21
		4/03	24	15
		10/03	24	
		4/04	15	19

**TABLE 12: Continued...**

Chemical	Upgradient Mean + 2(standard deviation)	Date of exceedence(s)	Monitoring well concentration (mg/L)	
			MW-92-4	MW-92-6
<b>Conductance</b>	<b>1.26</b>	9/98		1.50
		4/00		1.86
		10/00		1.79
		4/01		1.83
		10/01		1.33
		4/02		1.32
		10/02		1.52
		4/03		1.71
<b>PH</b>	<b>8.30</b>	4/97		
		10/97		9.9
		1/98		8.6
		4/01		7.8
<b>Temperature</b>	<b>16.44</b>	7/97	21.1	20

**TABLE 13: Chemicals exceeding both Action Levels and Upgradient Mean + 2(Standard Deviation)**

Chemical	Date of exceedence(s)	Action Level	Upgradient Mean + 2(standard deviation)	Monitoring well concentration (mg/L)	
					MW-92-6
<b>Arsenic</b>	7/97	<b>0.001</b>	<b>0.001</b>		0.009
	10/97				0.014
	1/98				0.005
<b>Iron</b>	9/98	<b>0.3</b>	<b>0.26</b>		4.12
	10/00				0.358
	4/03				0.933
<b>PH</b>	10/97	<b>Upper action level = 8.5</b>	<b>8.15</b>		9.9
	1/98				8.6

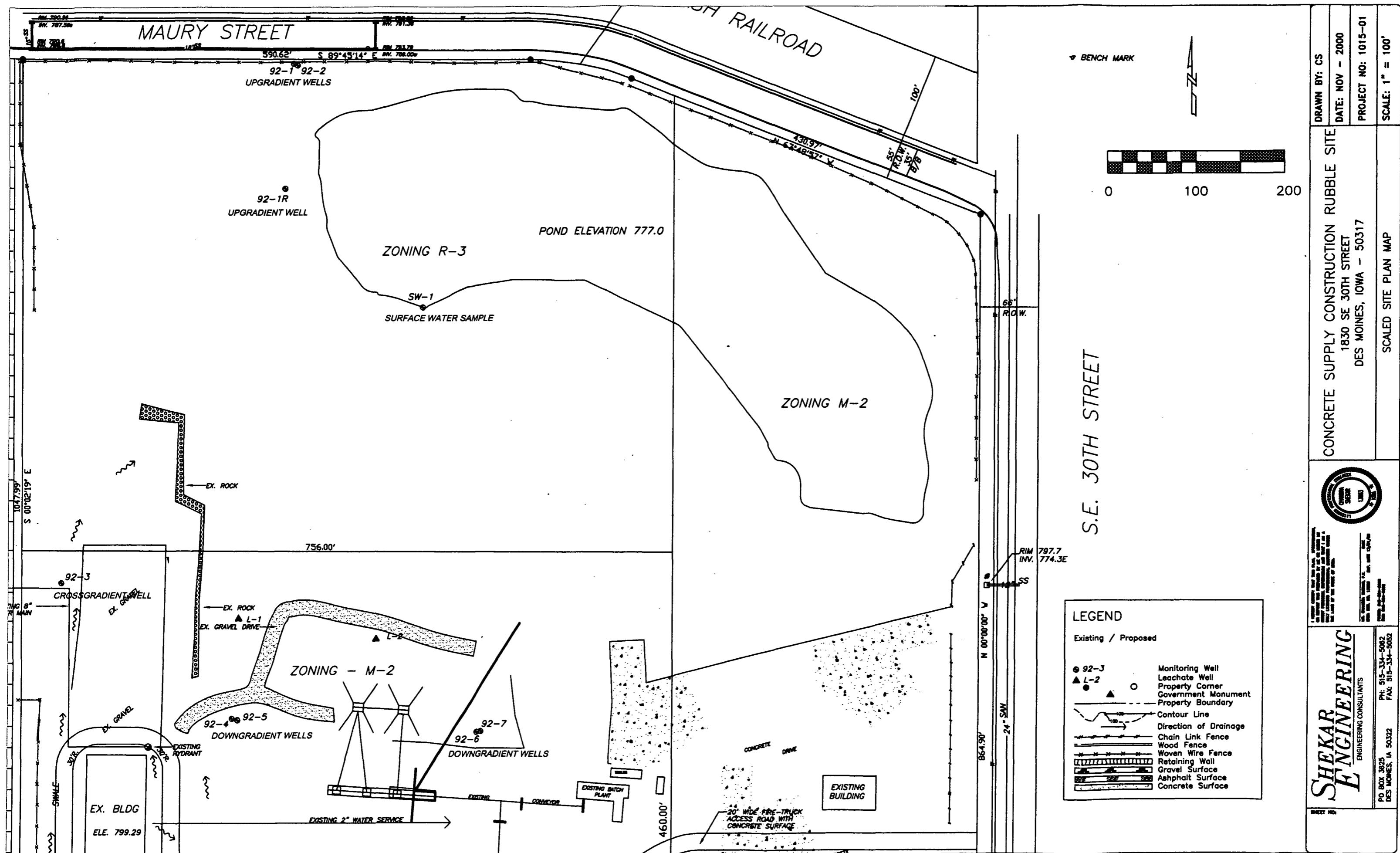
**TABLE 14: LOWER AQUIFER (Monitoring wells are deep): Upgradient Mean + 2(Standard Deviation)**

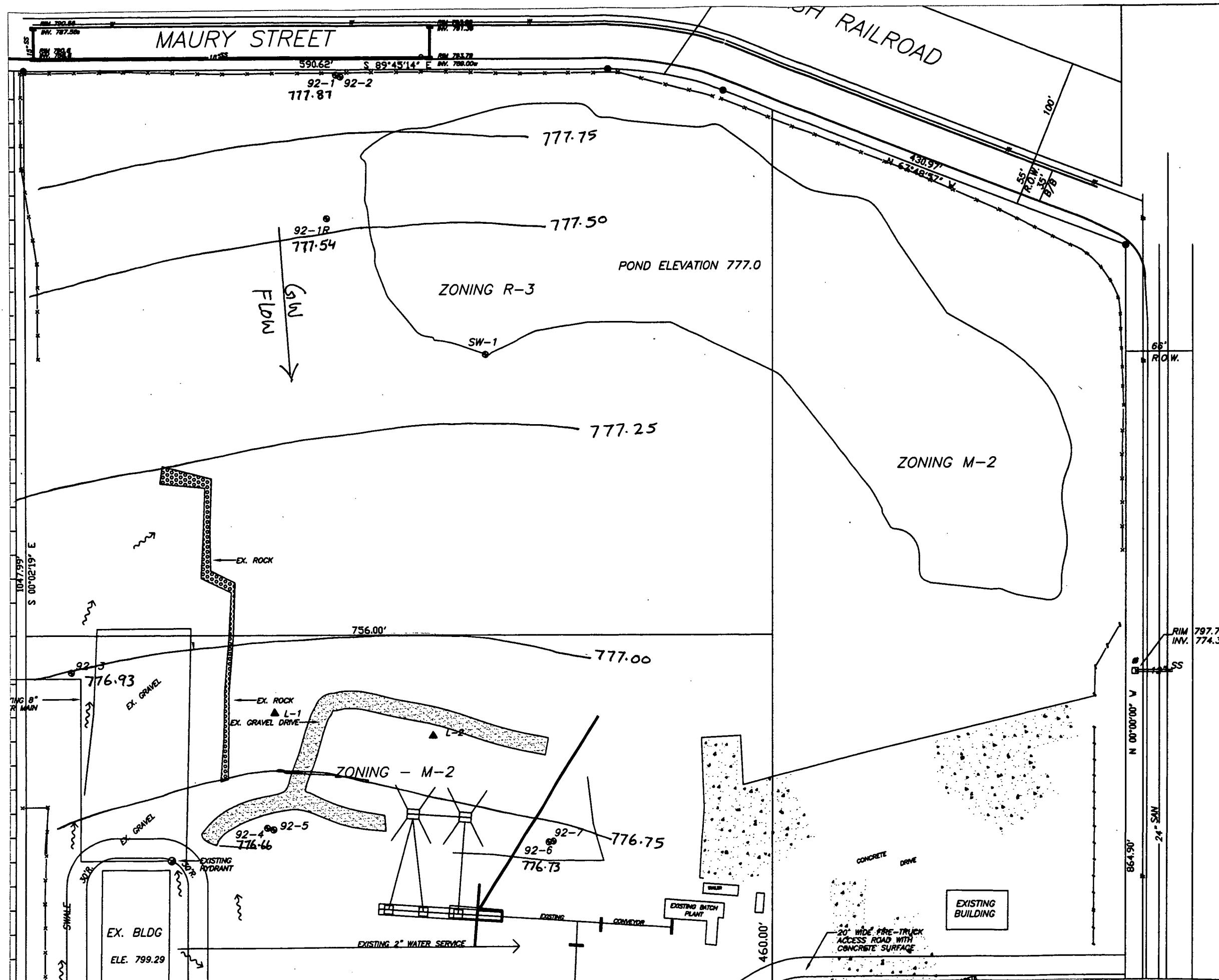
Chemical	Upgradient Mean + 2(standard deviation)	Date of exceedence(s)	Monitoring well concentration (mg/L)	
			MW-92-5	MW-92-7
<b>Barium</b>	<b>0.1599</b>	1/98		0.167
		3/99	0.19	0.164
<b>Magnesium, Dissolved</b>	<b>52.8382</b>	4/97		57
		1/98		61
		3/99		55.7
<b>Zinc, Dissolved</b>	<b>0.0486</b>	7/97	0.083	0.072
<b>Chloride</b>	<b>98.35</b>	10/03		113
<b>Chemical O<sub>2</sub> Demand</b>	<b>16.11</b>	4/97		19
		4/03		25
		4/04		20
<b>Conductance</b>	<b>1.33</b>	9/98		1.5
		3/99		1.43
		10/02		1.35
<b>Temperature</b>	<b>16.49</b>	7/97	18.30	17.80

**TABLE 15: SURFACE WATER RESULTS EXCEEDING ACTION LEVELS**

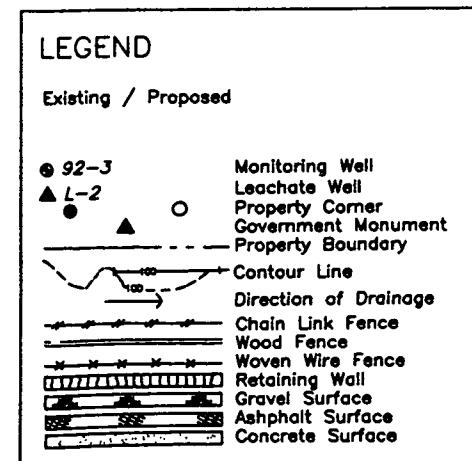
Chemical	Date of exceedence(s)	Action Level	SW-1 concentration
<b>Arsenic</b>	4/97	<b>0.001</b>	0.0013 mg/L
	7/97		0.002 mg/L
	10/97		0.0029 mg/L
	1/98		0.003 mg/L
	9/98		0.003 mg/L
<b>PH</b>	4/97	<b>Upper action level = 8.5</b>	11.4
	7/97	<b>Lower action level = 6.5</b>	10.1
	10/97		11.2
	1/98		11.8
	9/98		9.5
	3/99		9.8
	4/00		9.8
	4/01		8.7
	4/02		11.3
	10/02		11.2
	4/03		11.3
	10/03		10.6
	4/04		10.29
	10/04		9.42

**APPENDIX - 2  
MAPS**



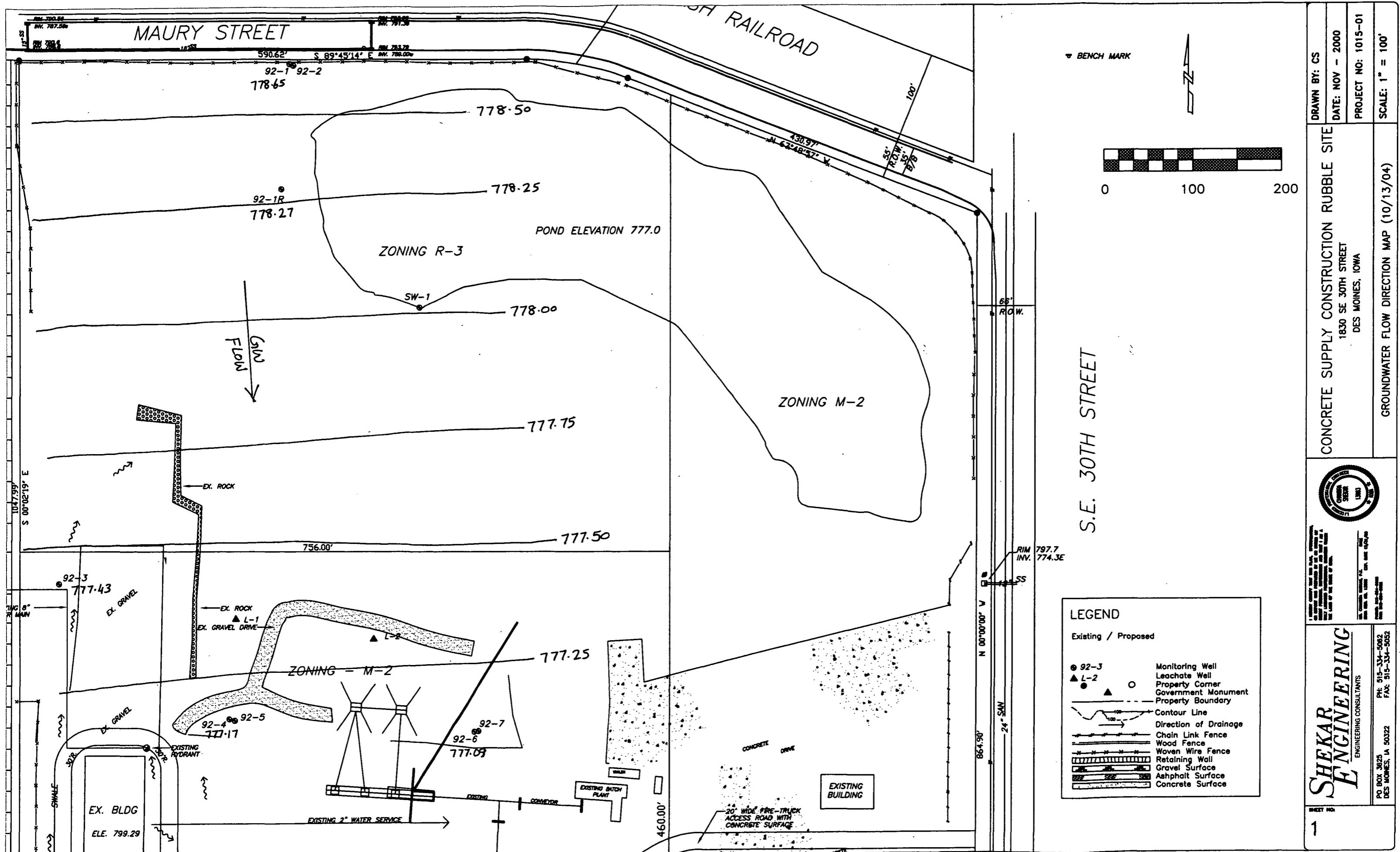


S.E. 30TH STREET



1

CONCRETE SUPPLY CONSTRUCTION RUBBLE SITE		DATE: NOV - 2000
1830 SE 30TH STREET		PROJECT NO: 1015-01
DES MOINES, IOWA		SCALE: 1" = 100'
GROUNDWATER FLOW DIRECTION MAP (4/30/04)		
		
<u>SHEKAR ENGINEERING</u> ENGINEERING CONSULTANTS		
PO BOX 36225 DES MOINES, IA 50332	PH: 515-334-5062 FAX: 515-334-5052	



**APPENDIX - 3**  
**CONTAMINANT GRAPHS**

**Upper Aquifer (Monitoring Wells are Shallow) Sampling Result - 1997 to 2004**

**Arsenic, Dissolved (mg/L)**

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-1		MW-92-4	MW-92-6
Apr-97	<0.001		<0.001	0.001
Jul-97	<0.001		<0.001	0.009
Oct-97	<0.001		<0.001	0.014
Jan-98	<0.001		<0.001	0.005
Mar-99	<0.001		<0.001	<0.001

Upgradient Mean + 2(Standard Deviation) = 0.0010 Action Level = 0.001 dNRL

**Barium, Dissolved (mg/l)**

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-1		MW-92-4	MW-92-6
Apr-97	0.091		0.042	0.075
Jul-97	0.089		0.035	0.034
Oct-97	0.085		0.037	0.030
Jan-98	0.098		0.04	0.069
Mar-99	0.085		0.05	0.098

Upgradient Mean + 2(Standard Deviation) = 0.1003 Action Level = 2 fHAL

**Magnesium, Dissolved (mg/l)**

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-1		MW-92-4	MW-92-6
Apr-97	46.7		34.4	30.7
Jul-97	46.9		31.9	14
Oct-97	43		31.5	2.23
Jan-98	45		29	7.3
Mar-99	42.1		25.7	27.9

Upgradient Mean + 2(Standard Deviation) = 48.9952 Action Level = None

**Zinc, Dissolved (mg/l)**

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-1		MW-92-4	MW-92-6
Apr-97	<0.03		0.032	<0.03
Jul-97	<0.03		0.046	0.031
Oct-97	<0.03		<0.03	<0.03
Jan-98	<0.03		<0.03	<0.03
Mar-99	<0.03		<0.03	<0.03

Upgradient Mean + 2(Standard Deviation) = 0.0300 Action Level = 2 fHAL

### Trichloroethylene ( $\mu\text{g/l}$ )

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-1		MW-92-4	MW-92-6
Apr-97	6.4		<1	<1
Jul-97	3		<1	<1
Oct-97	6		<1	<1
Jan-98	6.9		<1	<1
Mar-99	6.3		<1	<1
Apr-00	9.7		<1	<1
Oct-00	20		<1	<1
Apr-01	4.4		<1	<1
Oct-01	4.8		<1	<1
Apr-02	5.9		<1	<1
Oct-02	6.8		<1	<1
Apr-03	7.3		<1	<1
Oct-03	7		<1	<1
Apr-04	6.3		<0.3	<0.3
Oct-04	6.4		<0.3	<0.3

Upgradient Mean + 2(Standard Deviation) = **14.8486**      Action Level = **3 fHAL**

### Trichloroethylene ( $\mu\text{g/l}$ )

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-1R		MW-92-4	MW-92-6
Apr-97			<1	<1
Jul-97			<1	<1
Oct-97			<1	<1
Jan-98			<1	<1
Mar-99			<1	<1
Apr-00	<1		<1	<1
Jul-00	<1			
Oct-00	<1		<1	<1
Jan-01	<2			
Apr-01	<1		<1	<1
Oct-01	<1		<1	<1
Apr-02	<1		<1	<1
Oct-02	<1		<1	<1
Apr-03	<1		<1	<1
Oct-03	<1		<1	<1
Apr-04	<0.3		<0.3	<0.3
Oct-04	<0.3		<0.3	<0.3

Upgradient Mean + 2(Standard Deviation) = **1.8123**      Action Level = **3 fHAL**

**Chloride (mg/l)**

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-1		MW-92-4	MW-92-6
Apr-97	40		53	61
Jul-97	49		47	88
Oct-97	41		58	155
Jan-98	44		80	142
Sep-98	49		52	54
Mar-99	34		48	100
Apr-00	37		40	120
Oct-00	41		58	119
Apr-01	49		49	135
Oct-01	38		63	117
Apr-02	39		75	126
Oct-02	53		102	127
Apr-03	40		64	129
Oct-03	32		117	113
Apr-04	42		61	115
Oct-04	44		115	123

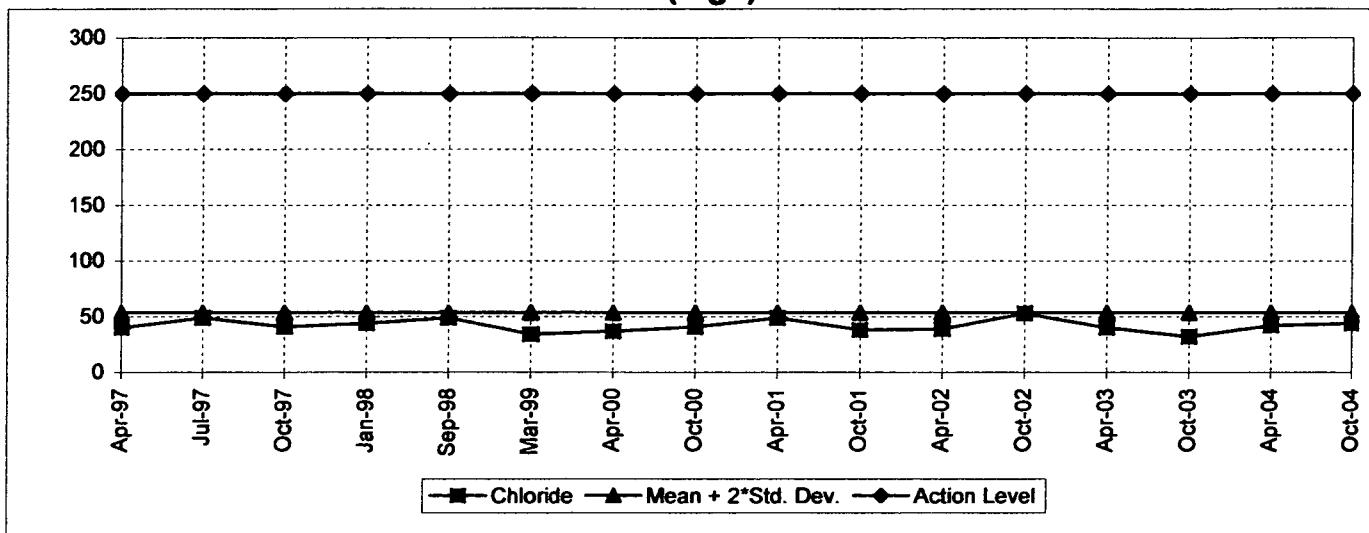
Upgradient Mean + 2(Standard Deviation) = **53.5470** Action Level = **250 fSMCL****Nitrogen, Ammonia (mg/l)**

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-1		MW-92-4	MW-92-6
Apr-97	<1		<1	<1
Jul-97	<1		<1	<1
Oct-97	<1		<1	3.2
Jan-98	<1		<1	1.1
Sep-98	<1		<1	<1
Mar-99	1.9		<1	<1
Apr-00	<1		<1	<1
Oct-00	<1		<1	<1
Apr-01	<1		<1	<1
Oct-01	<1		<1	<1
Apr-02	<1		<1	<1
Oct-02	<1		<1	<1
Apr-03	<1		<1	<1
Oct-03	<1		<1	<1
Apr-04	<1		<1	<1
Oct-04	<1		<1	<1

Upgradient Mean + 2(Standard Deviation) = **1.5063** Action Level = **30 dHAL**

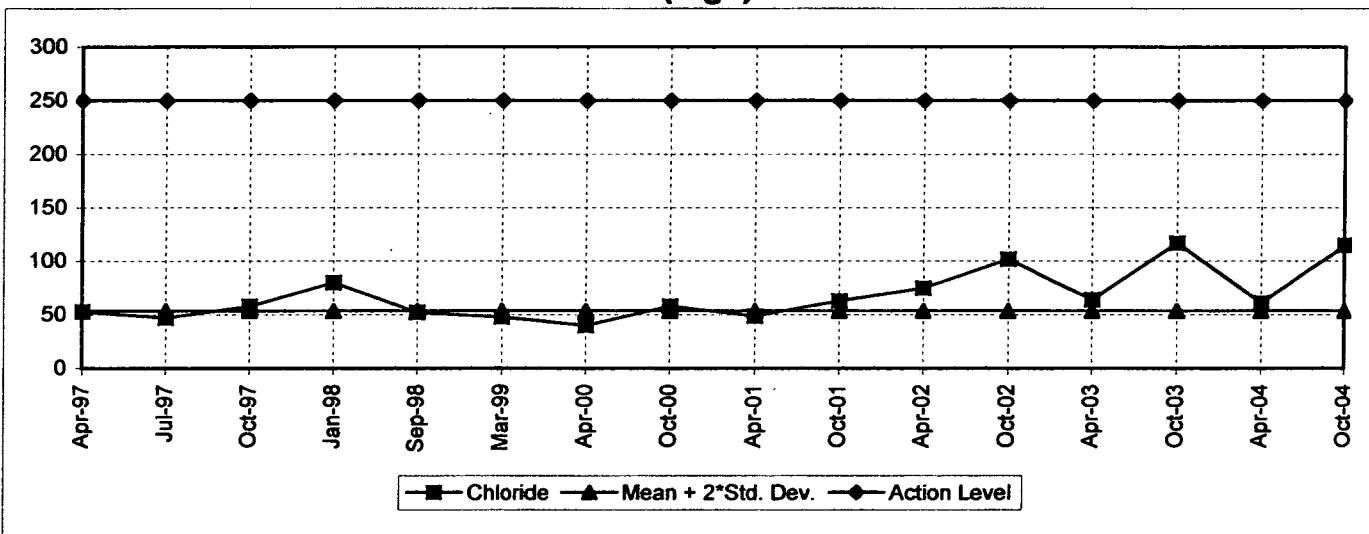
**MW-92-1**

**Chloride (mg/l)**



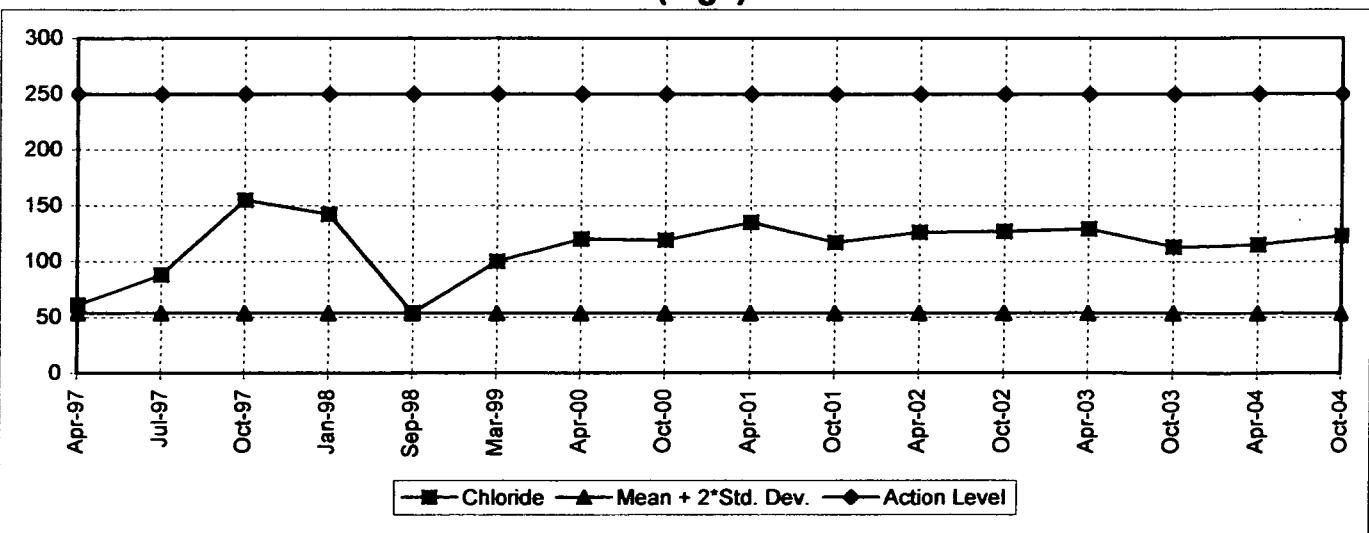
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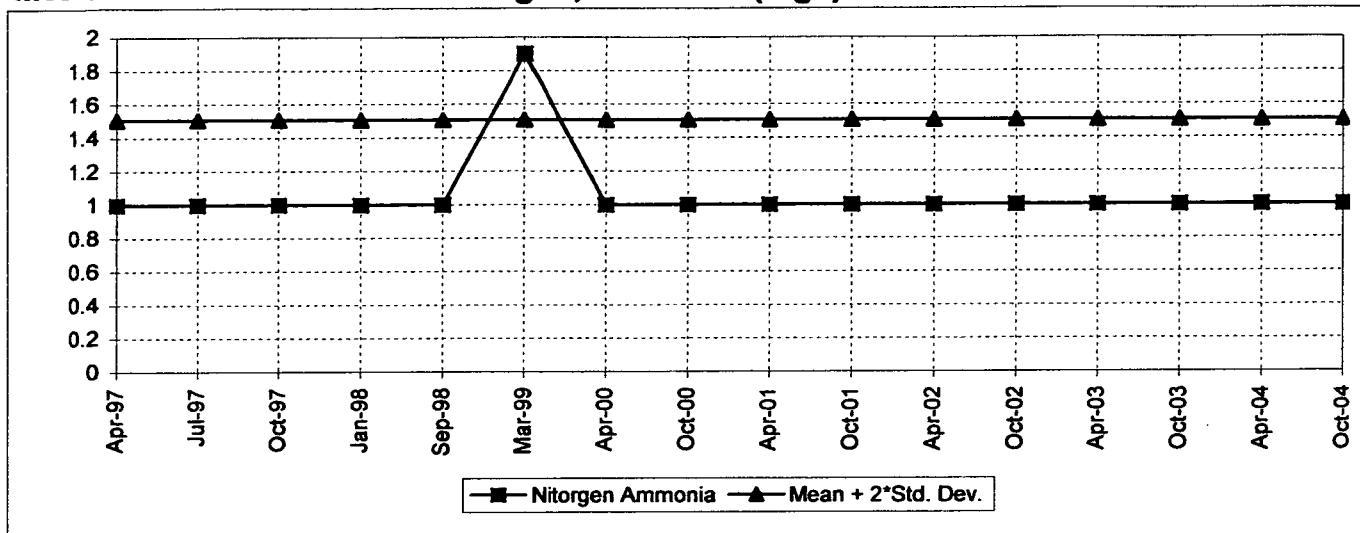
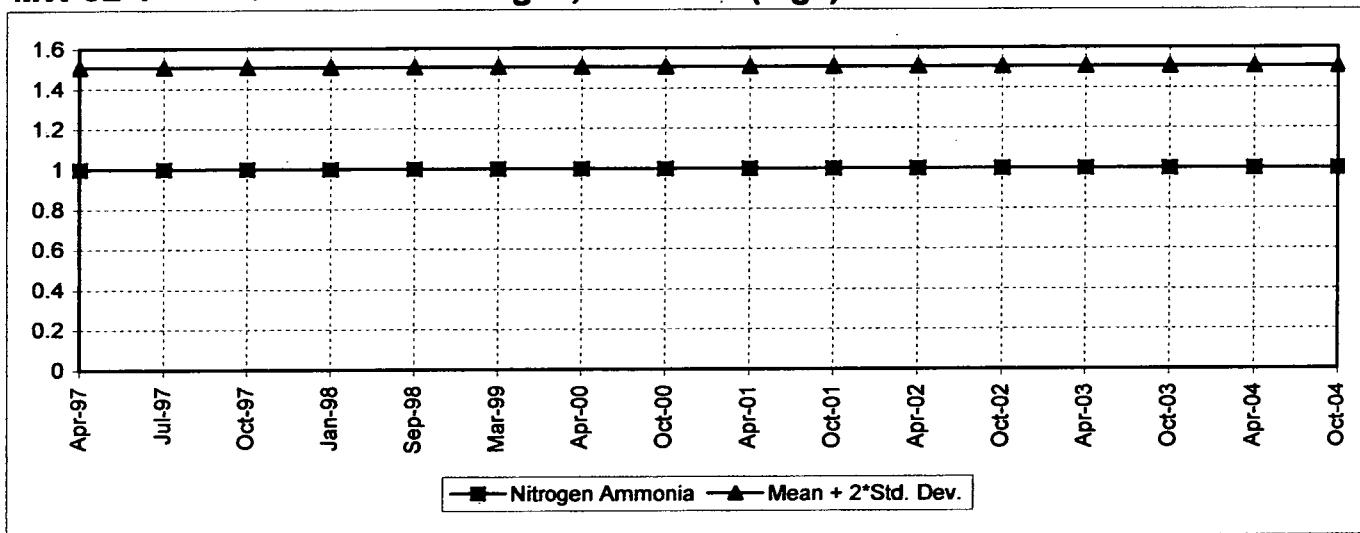
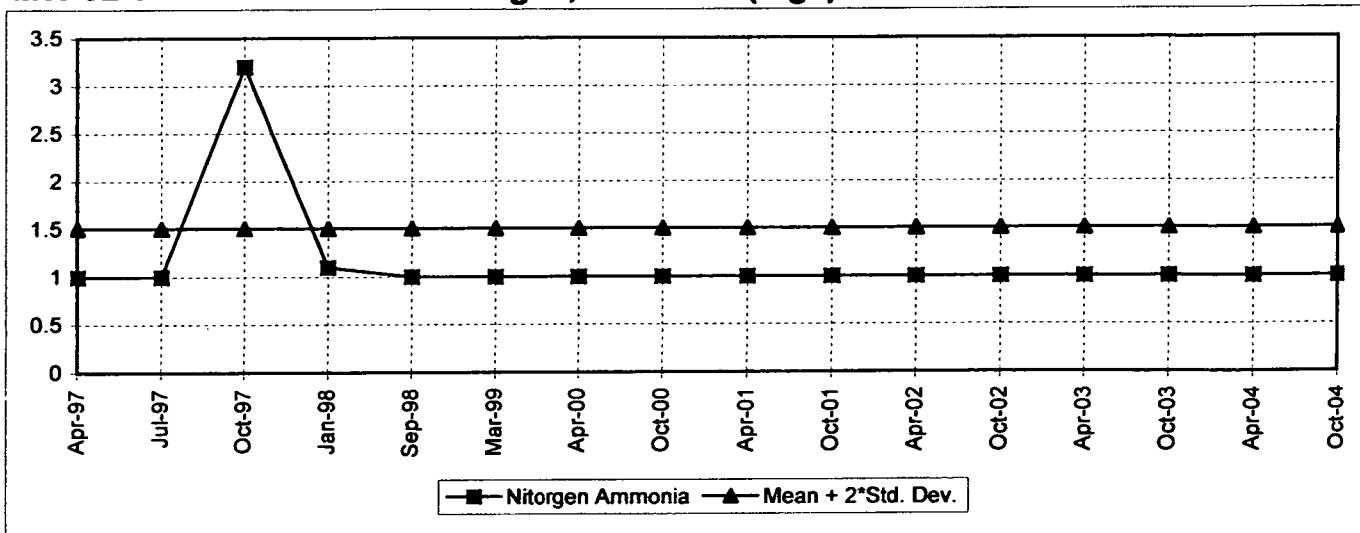
**Chloride (mg/l)**



**MW-92-6**

**Chloride (mg/l)**



**MW-92-1****Nitrogen, Ammonia (mg/l)****MW-92-4****Nitrogen, Ammonia (mg/l)****MW-92-6****Nitrogen, Ammonia (mg/l)**

### Iron, Dissolved (mg/l)

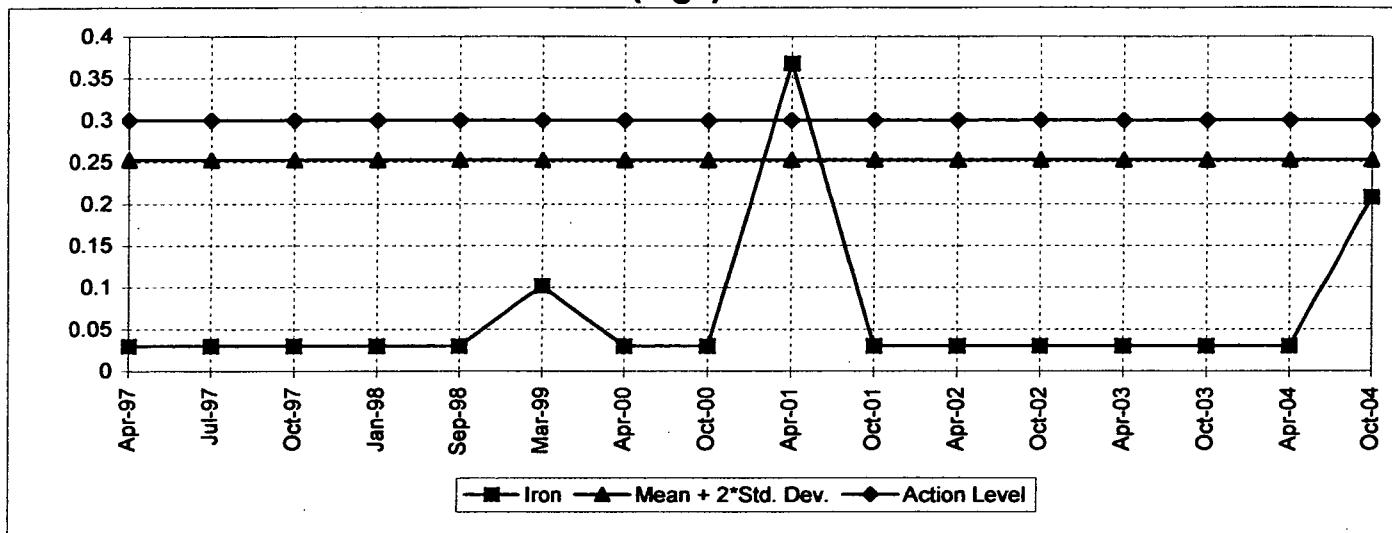
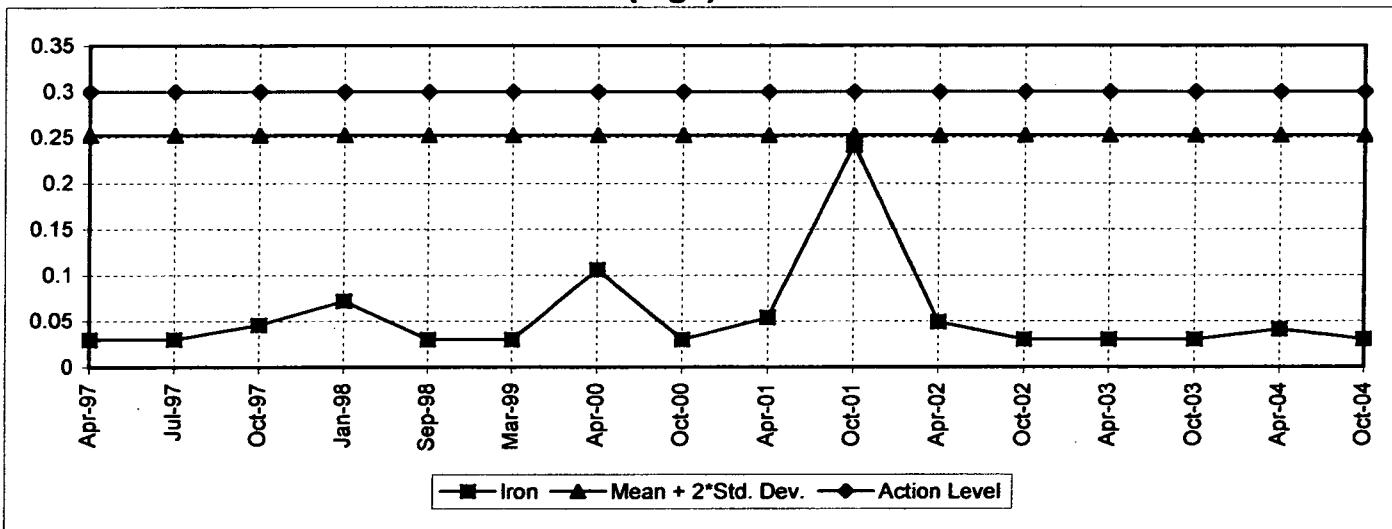
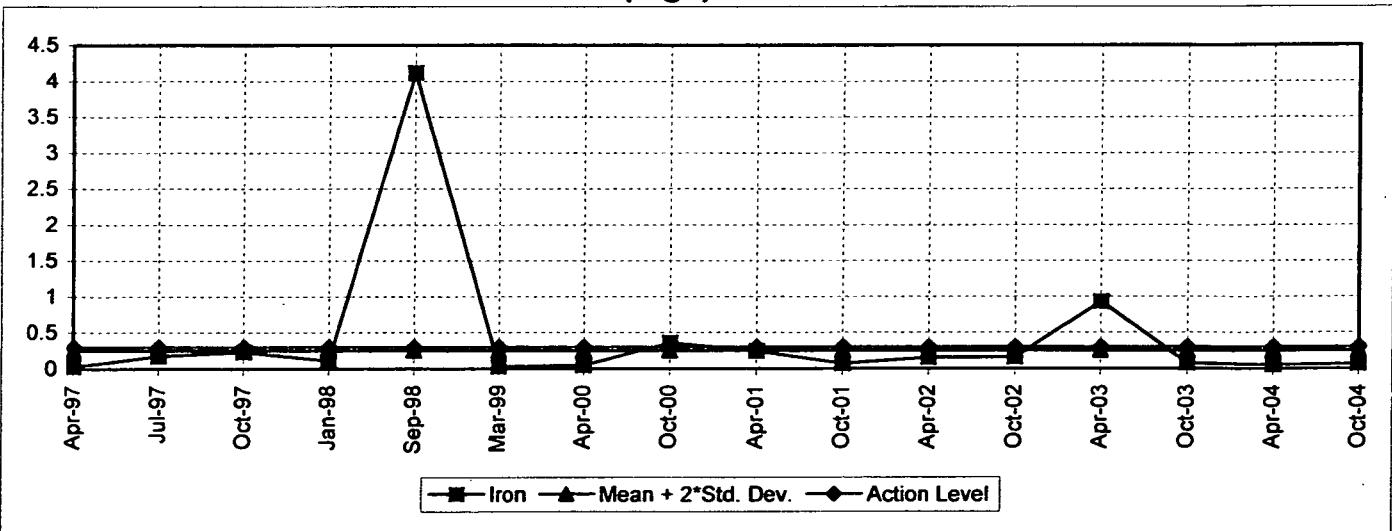
Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-1		MW-92-4	MW-92-6
Apr-97	<0.03		<0.03	<0.03
Jul-97	<0.03		<0.03	0.179
Oct-97	<0.03		0.046	0.235
Jan-98	<0.03		0.072	0.113
Sep-98	<0.03		<0.03	<b>4.12</b>
Mar-99	0.102		<0.03	<0.03
Apr-00	<0.03		0.106	0.051
Oct-00	<0.03		<0.03	<b>0.358</b>
Apr-01	0.368		0.054	<b>0.247</b>
Oct-01	<0.03		0.242	0.069
Apr-02	<0.03		0.049	0.154
Oct-02	<0.03		<0.03	0.159
Apr-03	<0.03		<0.03	<b>0.933</b>
Oct-03	<0.03		<0.03	0.075
Apr-04	<0.03		0.041	0.053
Oct-04	0.208		<0.03	0.068

Upgradient Mean + 2(Standard Deviation) = **0.2526** Action Level = 0.3 f action level

### Chemical Oxygen Demand (mg/l)

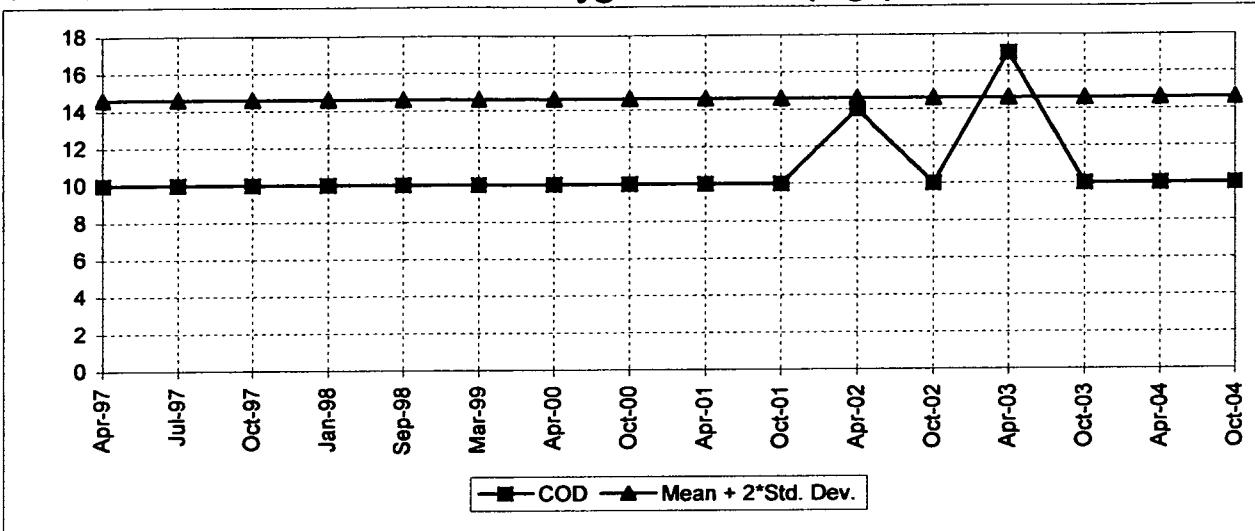
Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-1		MW-92-4	MW-92-6
Apr-97	<10		14	<b>15</b>
Jul-97	<10		<10	<10
Oct-97	<10		<10	<b>36</b>
Jan-98	<10		<b>23</b>	<b>26</b>
Sep-98	<10		14	<10
Mar-99	<10		<10	<b>19.4</b>
Apr-00	<10		<10	<10
Oct-00	<10		<10	<b>22</b>
Apr-01	<10		<10	12
Oct-01	<10		<10	<10
Apr-02	14		<10	14
Oct-02	<10		<b>20</b>	<b>21</b>
Apr-03	17		<b>24</b>	<b>15</b>
Oct-03	<10		<b>24</b>	14
Apr-04	<10		<b>15</b>	<b>19</b>
Oct-04	<10		<10	13

Upgradient Mean + 2(Standard Deviation) = **14.6012** Action Level = None

**MW-92-1****Iron (mg/l)****MW-92-4****Iron (mg/l)****MW-92-6****Iron (mg/l)**

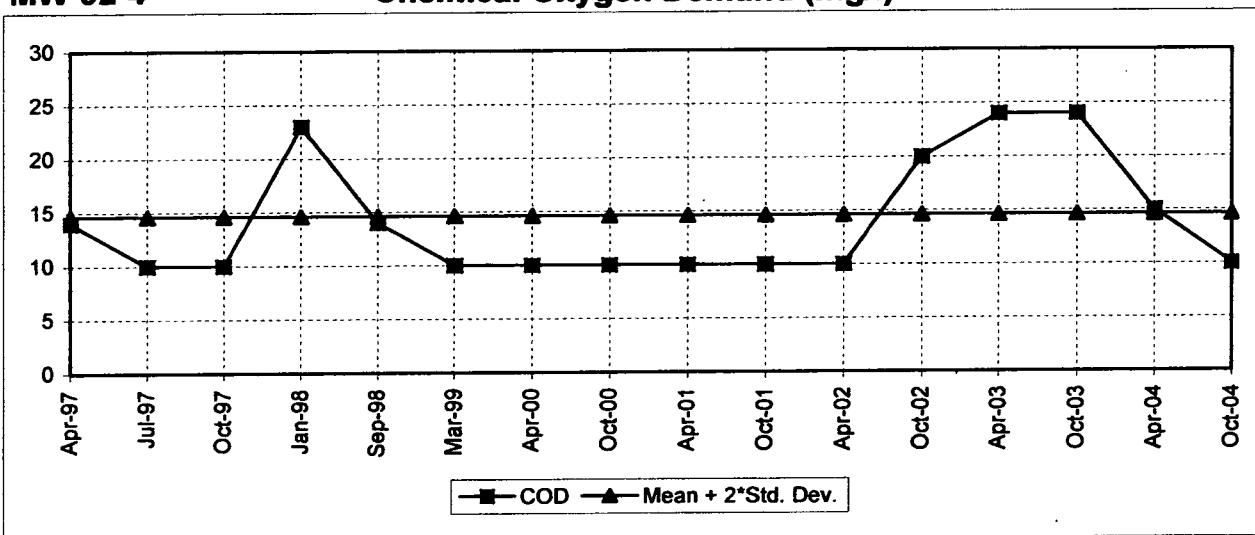
**MW-92-1**

**Chemical Oxygen Demand (mg/l)**



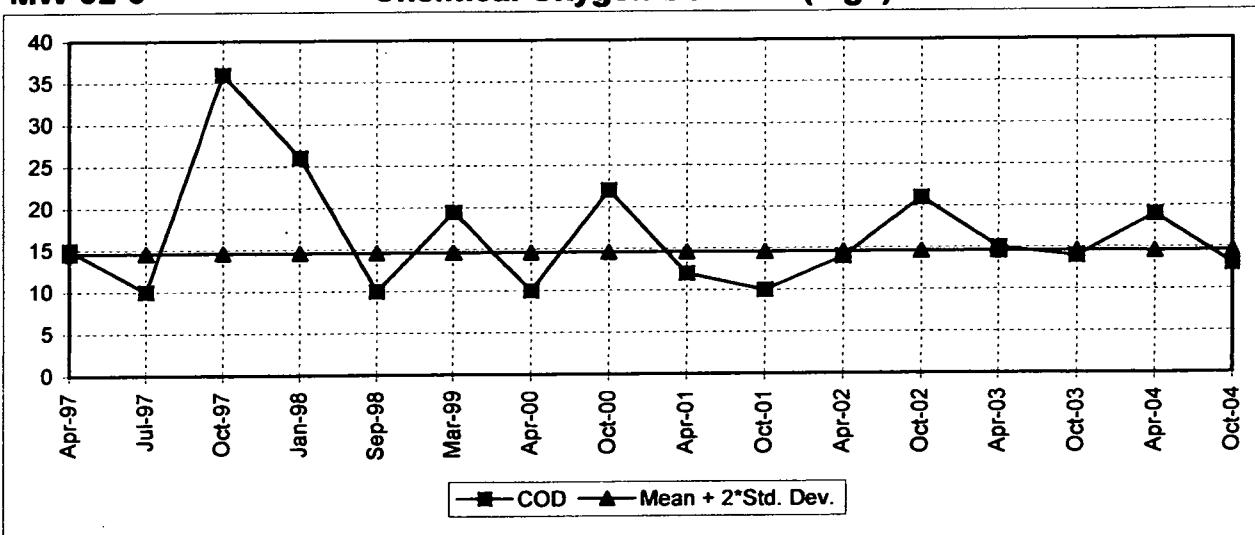
**MW-92-4**

**Chemical Oxygen Demand (mg/l)**



**MW-92-6**

**Chemical Oxygen Demand (mg/l)**



**Conductance (mS)**

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-1		MW-92-4	MW-92-6
Apr-97	0.68		0.68	0.67
Jul-97	1.00		0.90	0.80
Oct-97	0.95		0.94	1.09
Jan-98	0.93		0.90	1.23
Sep-98	1.12		1.00	<b>1.50</b>
Mar-99	1.02		0.96	1.21
Apr-00	1.04		0.97	<b>1.86</b>
Oct-00	1.15		0.96	<b>1.79</b>
Apr-01	1.13		1.07	<b>1.83</b>
Oct-01	1.02		0.90	<b>1.33</b>
Apr-02	0.99		0.70	<b>1.32</b>
Oct-02	1.18		0.74	<b>1.52</b>
Apr-03	1.01		0.64	<b>1.71</b>
Oct-03	1.04		0.98	1.19
Apr-04	1.06		0.64	1.23
Oct-04	1.13		0.97	1.19

Upgradient Mean + 2(Standard Deviation) = **1.2633** Action Level = None

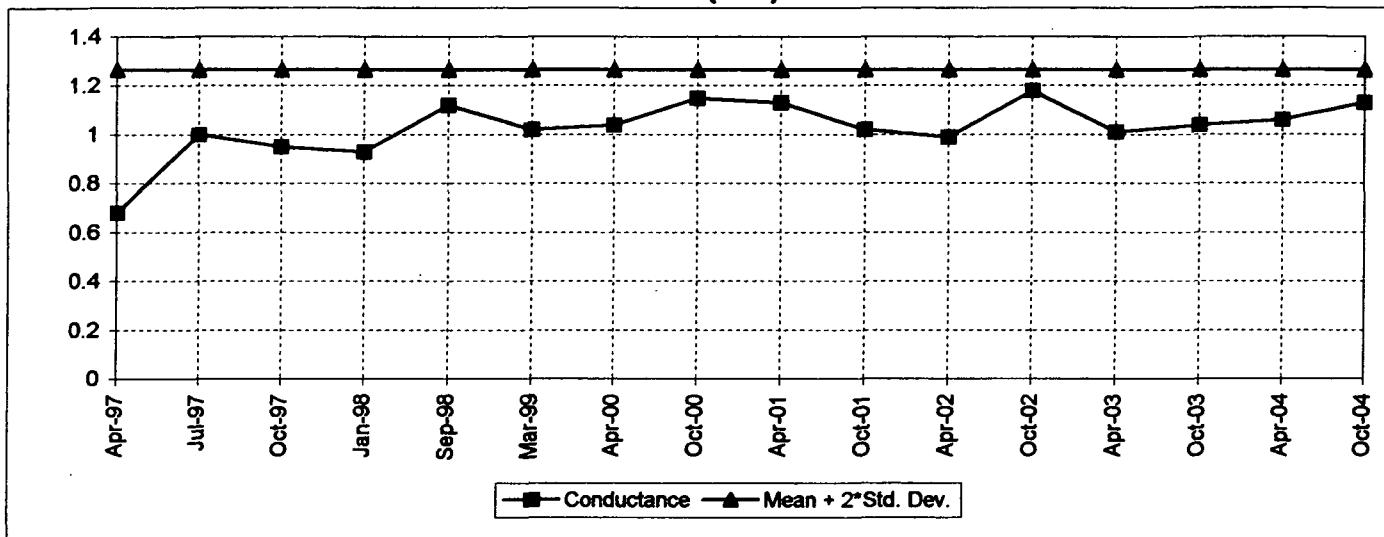
**pH**

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-1		MW-92-4	MW-92-6
Apr-97	7.1		7.6	<b>8.2</b>
Jul-97	6.7		7.3	<b>8.0</b>
Oct-97	7.3		8.0	<b>9.9</b>
Jan-98	7.4		7.8	<b>8.6</b>
Sep-98	7.0		7.6	<b>8.2</b>
Mar-99	6.7		6.8	7.0
Apr-00	6.9		6.9	7.1
Oct-00	6.7		7.1	7.0
Apr-01	7.0		7.6	7.8
Oct-01	7.7		6.8	7.0
Apr-02	8.4		7.8	7.0
Oct-02	6.8		7.2	6.8
Apr-03	6.7		7.5	6.6
Oct-03	5.9		6.7	6.9
Apr-04	5.9		6.4	6.6
Oct-04	5.3		6.4	7.3

Upgradient Mean + 2(Standard Deviation) = **8.3086** Upper Action Level = **8.5 fSMCL**  
 Upgradient Mean - 2(Standard Deviation) = **5.3614** Lower Action Level = **6.5 fSMCL**

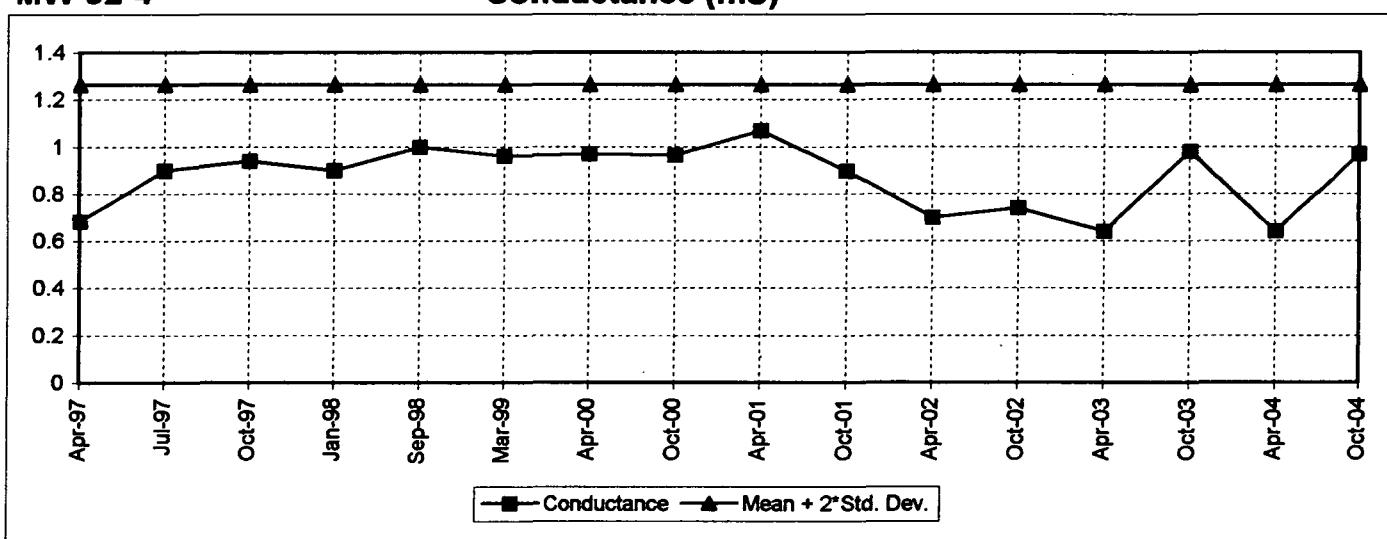
**MW-92-1**

**Conductance (mS)**



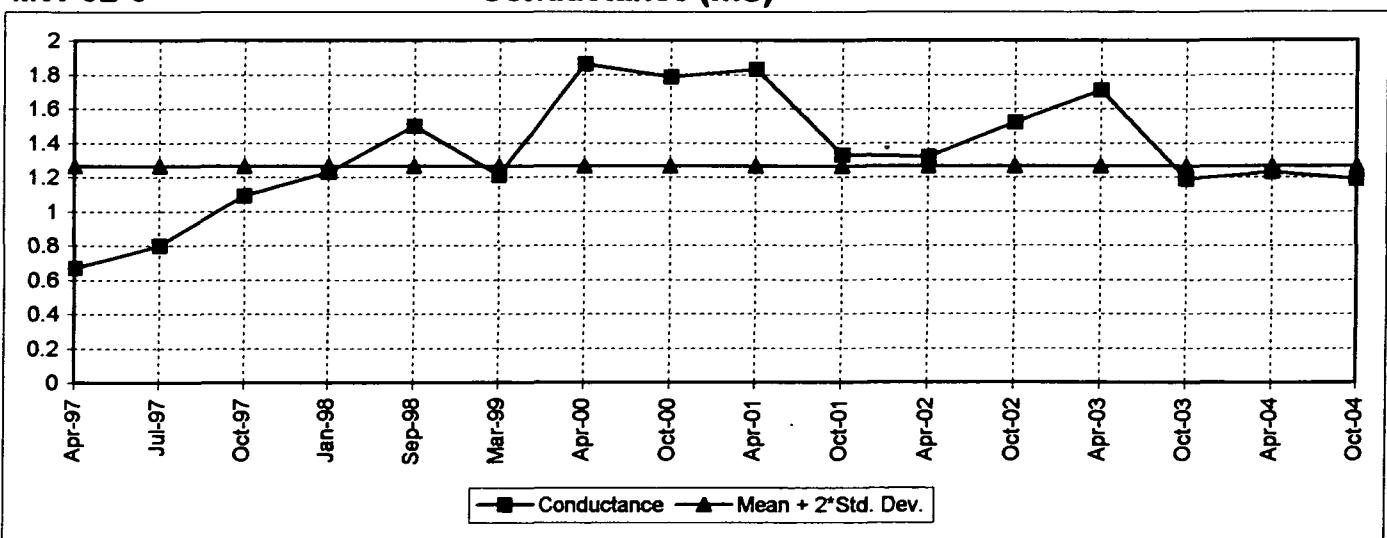
**MW-92-4**

**Conductance (mS)**



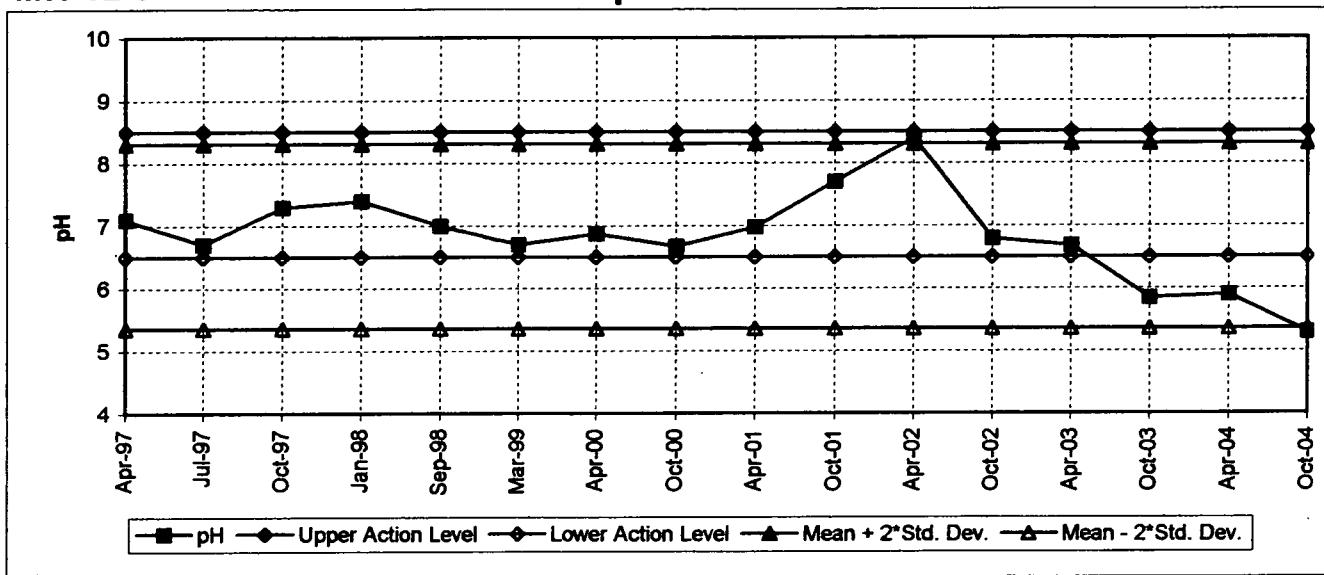
**MW-92-6**

**Conductance (mS)**



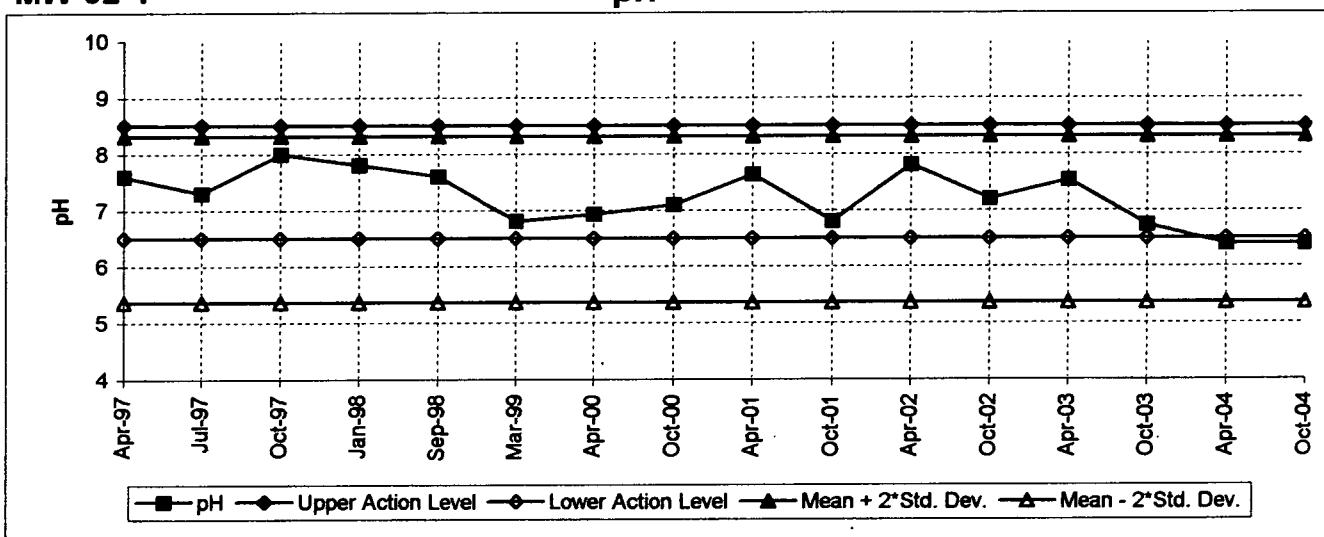
MW-92-1

pH



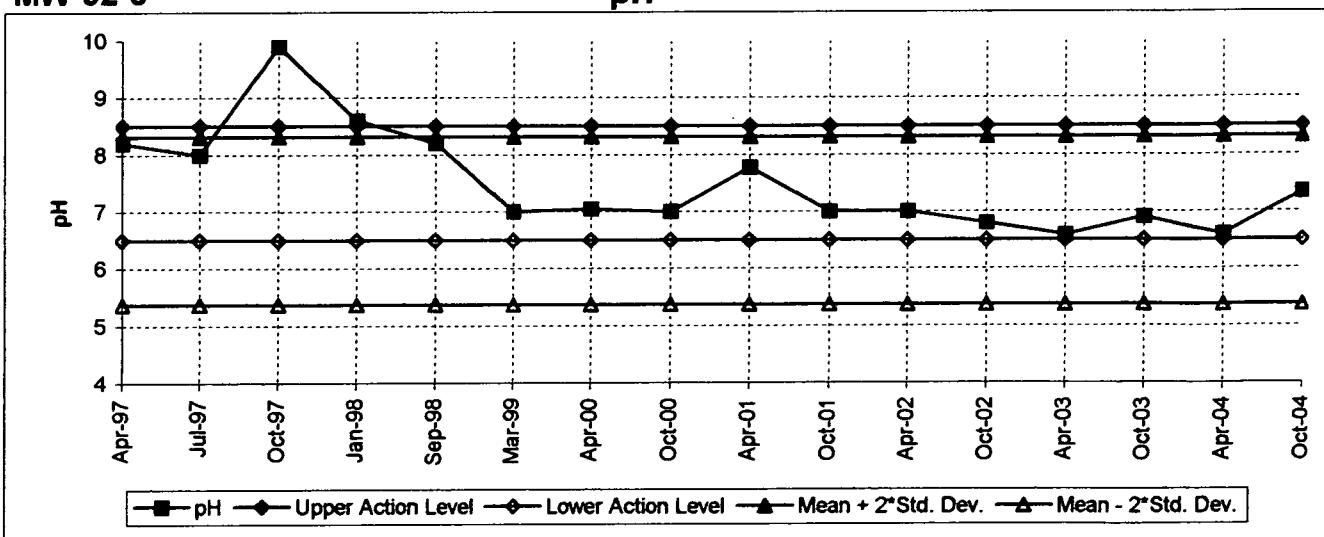
MW-92-4

pH



MW-92-6

pH



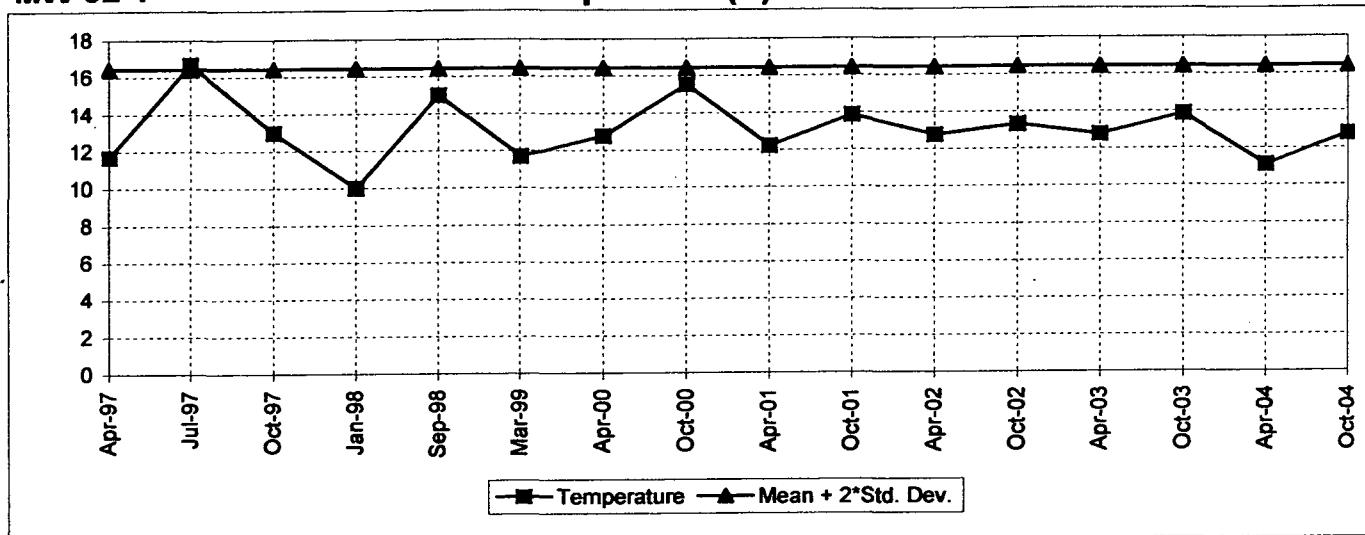
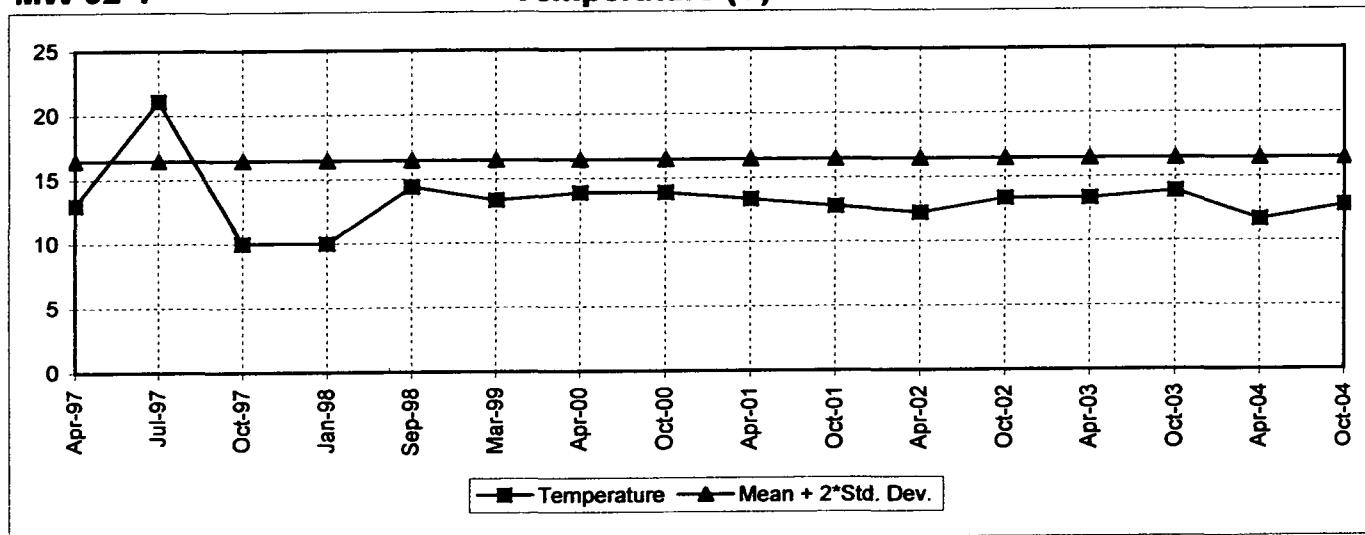
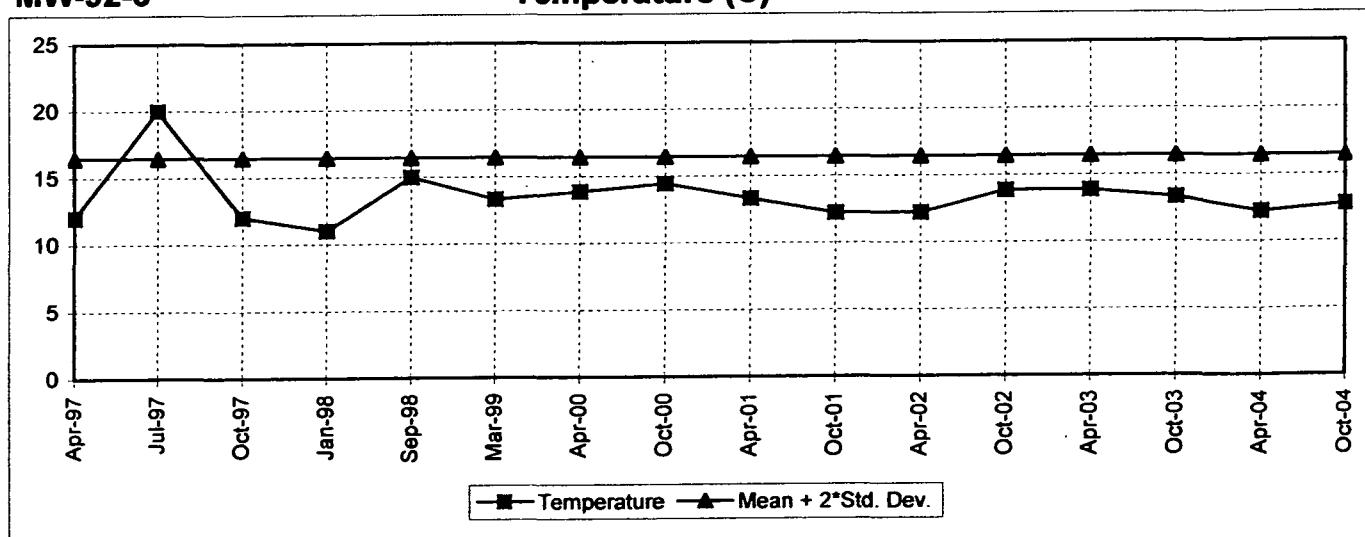
**Temperature (C)**

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-1		MW-92-4	MW-92-6
Apr-97	11.70		13.00	12.00
Jul-97	16.70		<b>21.10</b>	<b>20.00</b>
Oct-97	13.00		10.00	12.00
Jan-98	10.00		10.00	11.00
Sep-98	15.00		14.40	15.00
Mar-99	11.70		13.33	13.33
Apr-00	12.77		13.88	13.88
Oct-00	15.55		13.88	14.44
Apr-01	12.22		13.33	13.33
Oct-01	13.88		12.77	12.22
Apr-02	12.78		12.22	12.22
Oct-02	13.33		13.33	13.88
Apr-03	12.77		13.33	13.88
Oct-03	13.88		13.88	13.33
Apr-04	11.11		11.67	12.22
Oct-04	12.78		12.78	12.78

Upgradient Mean + 2(Standard Deviation) = **16.4407**

Action Level =

None

**MW-92-1****Temperature (C)****MW-92-4****Temperature (C)****MW-92-6****Temperature (C)**

**Lower Aquifer (Monitoring Wells are Deep) Sampling Result - 1997 to 2004**

**Arsenic, Dissolved (mg/L)**

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-2		MW-92-5	MW-92-7
Apr-97	<0.001		<0.001	<0.001
Jul-97	<0.001		<0.001	<0.001
Oct-97	<0.001		<0.001	<0.001
Jan-98	0.001		<0.001	0.001
Mar-99	<0.001		<0.001	<0.001
Upgradient Mean + 2(Standard Deviation) =		<b>0.0010</b>	Action Level =	
				<b>0.001 dNRL</b>

**Barium, Dissolved (mg/l)**

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-2		MW-92-5	MW-92-7
Apr-97	0.139		0.090	0.150
Jul-97	0.101		0.073	0.088
Oct-97	0.113		0.090	0.120
Jan-98	0.145		0.104	<b>0.167</b>
Mar-99	0.112		<b>0.19</b>	<b>0.164</b>
Upgradient Mean + 2(Standard Deviation) =		<b>0.1599</b>	Action Level =	
				<b>2 fHAL</b>

**Cadmium, Dissolved (mg/l)**

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-2		MW-92-5	MW-92-7
Apr-97	0.002		<0.001	<0.001
Jul-97	0.001		0.002	<0.001
Oct-97	<0.001		<0.001	<0.001
Jan-98	<0.001		<0.001	<0.001
Mar-99	<0.001		<0.001	<0.001
Upgradient Mean + 2(Standard Deviation) =		<b>0.0021</b>	Action Level =	
				<b>0.005 fHAL</b>

**Magnesium, Dissolved (mg/l)**

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-2		MW-92-5	MW-92-7
Apr-97	48.5		49	<b>57</b>
Jul-97	48.1		47.6	32.5
Oct-97	46.8		46.8	43.8
Jan-98	49.0		50	<b>61</b>
Mar-99	41.6		47.4	<b>55.7</b>
Upgradient Mean + 2(Standard Deviation) =		<b>52.8382</b>	Action Level =	
				<b>None</b>

**Zinc, Dissolved (mg/l)**

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-2		MW-92-5	MW-92-7
Apr-97	<0.03		<0.03	0.03
Jul-97	<0.047		<b>0.083</b>	<b>0.072</b>
Oct-97	0.03		0.032	<0.03
Jan-98	<0.03		<0.03	<0.03
Mar-99	<0.03		<0.03	<0.03
Upgradient Mean + 2(Standard Deviation) =		<b>0.0486</b>	Action Level =	
				<b>2 fHAL</b>

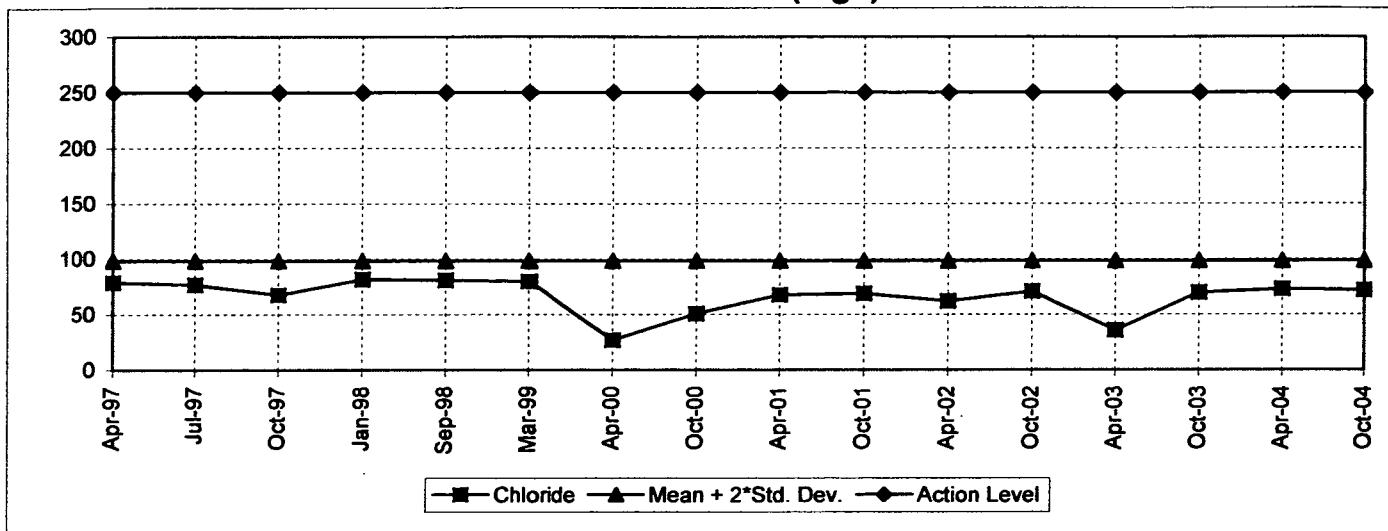
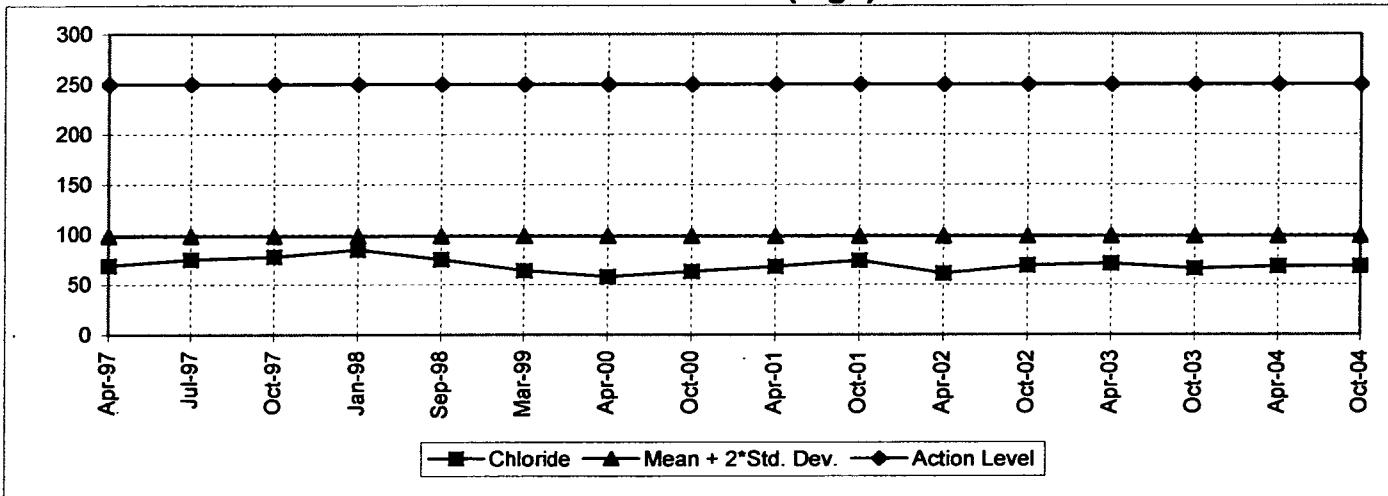
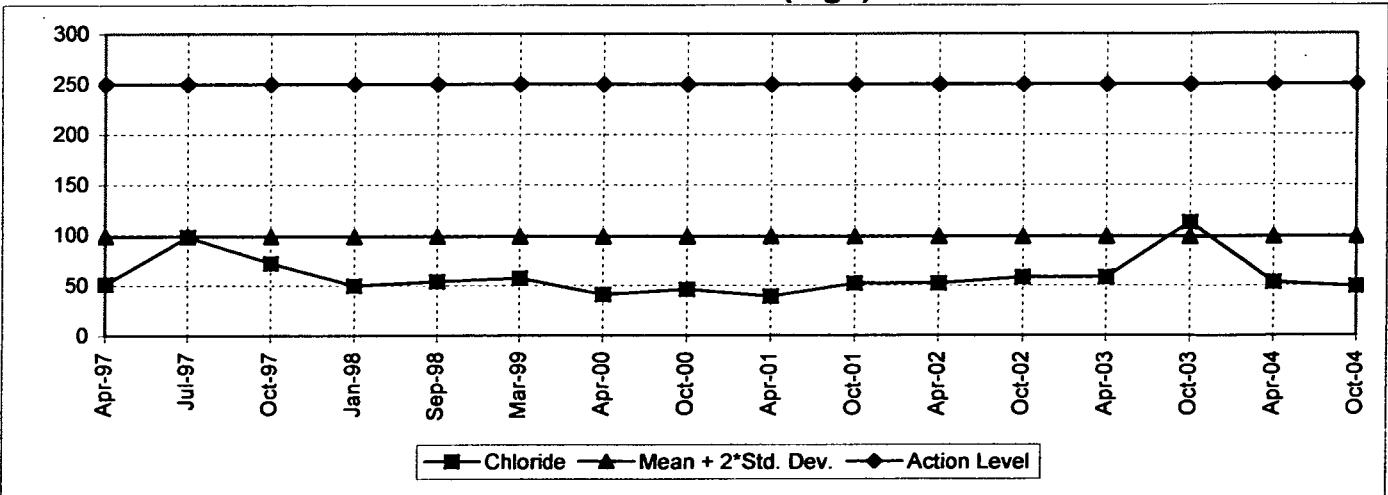
**Chloride (mg/l)**

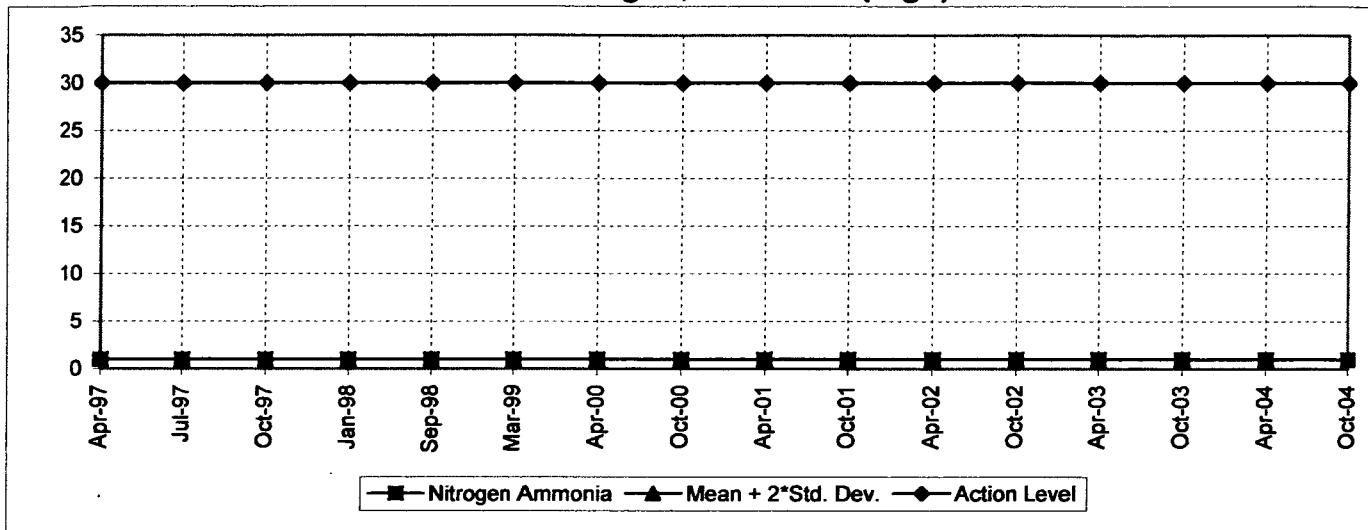
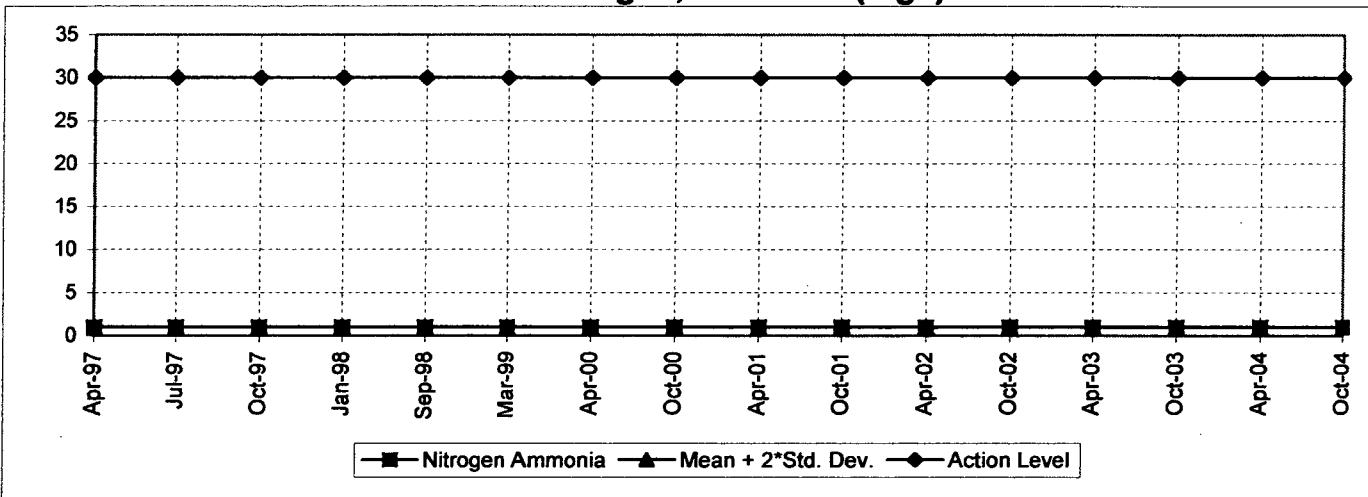
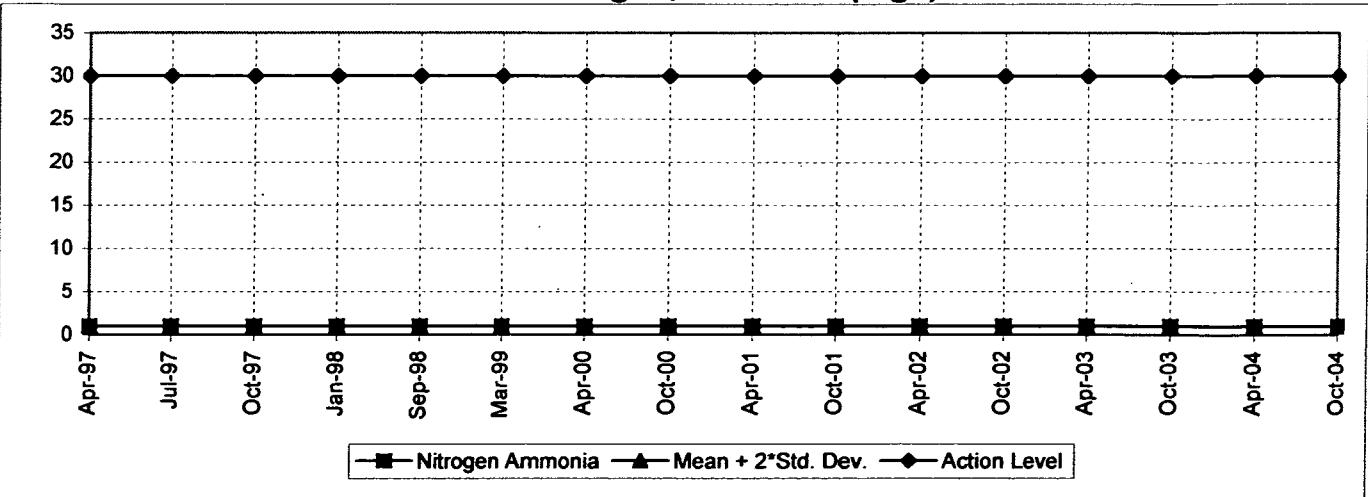
Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-2		MW-92-5	MW-92-7
Apr-97	79		69	51
Jul-97	77		75	98
Oct-97	68		78	72
Jan-98	82		85	50
Sep-98	81.2		75	54
Mar-99	80		64	57
Apr-00	27		58	41
Oct-00	51		63	46
Apr-01	68		68	39
Oct-01	69		74	52
Apr-02	62		61	52
Oct-02	71		69	58
Apr-03	36		71	58
Oct-03	70		66	113
Apr-04	73		68	53
Oct-04	72		68	49

Upgradient Mean + 2(Standard Deviation) = **98.3510**      Action Level = **250 fSMCL****Nitrogen, Ammonia (mg/l)**

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-2		MW-92-5	MW-92-7
Apr-97	<1		<1	<1
Jul-97	<1		<1	<1
Oct-97	<1		<1	<1
Jan-98	<1		<1	<1
Sep-98	<1		<1	<1
Mar-99	<1		<1	<1
Apr-00	<1		<1	<1
Oct-00	<1		<1	<1
Apr-01	<1		<1	<1
Oct-01	<1		<1	<1
Apr-02	<1		<1	<1
Oct-02	<1		<1	<1
Apr-03	<1		<1	<1
Oct-03	<1		<1	<1
Apr-04	<1		<1	<1
Oct-04	<1		<1	<1

Upgradient Mean + 2(Standard Deviation) = **1.0000**      Action Level = **30 fSMCL**

**MW-92-2****Chloride (mg/l)****MW-92-5****Chloride (mg/l)****MW-92-7****Chloride (mg/l)**

**MW-92-2****Nitrogen, Ammonia (mg/l)****MW-92-5****Nitrogen, Ammonia (mg/l)****MW-92-7****Nitrogen, Ammonia (mg/l)**

### Iron, Dissolved (mg/l)

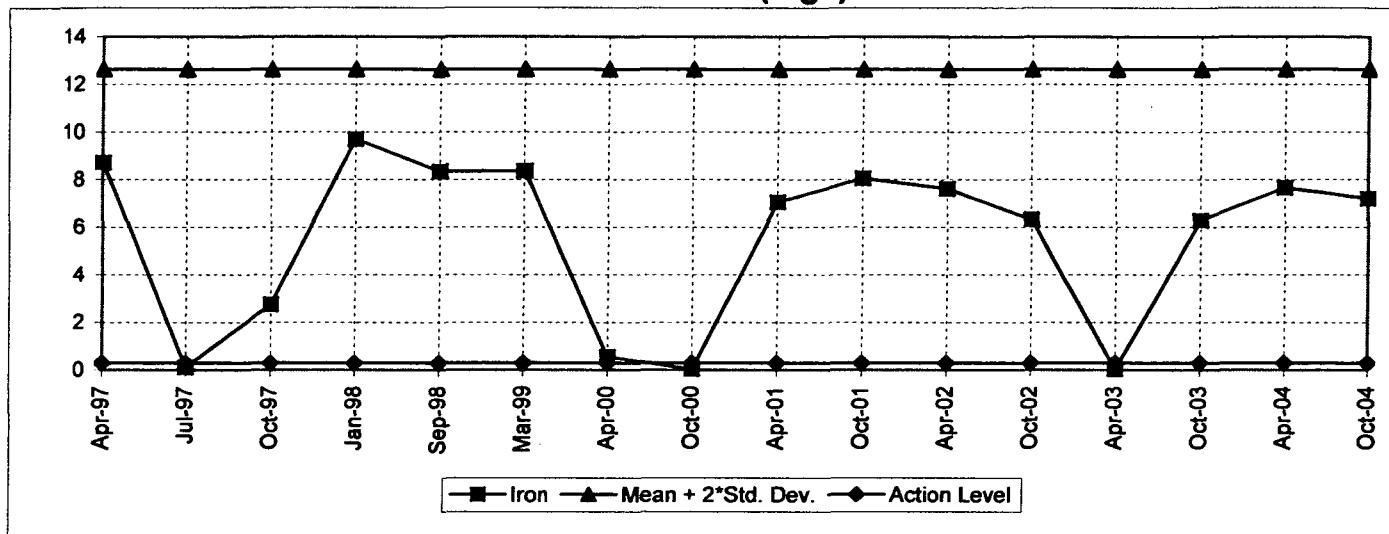
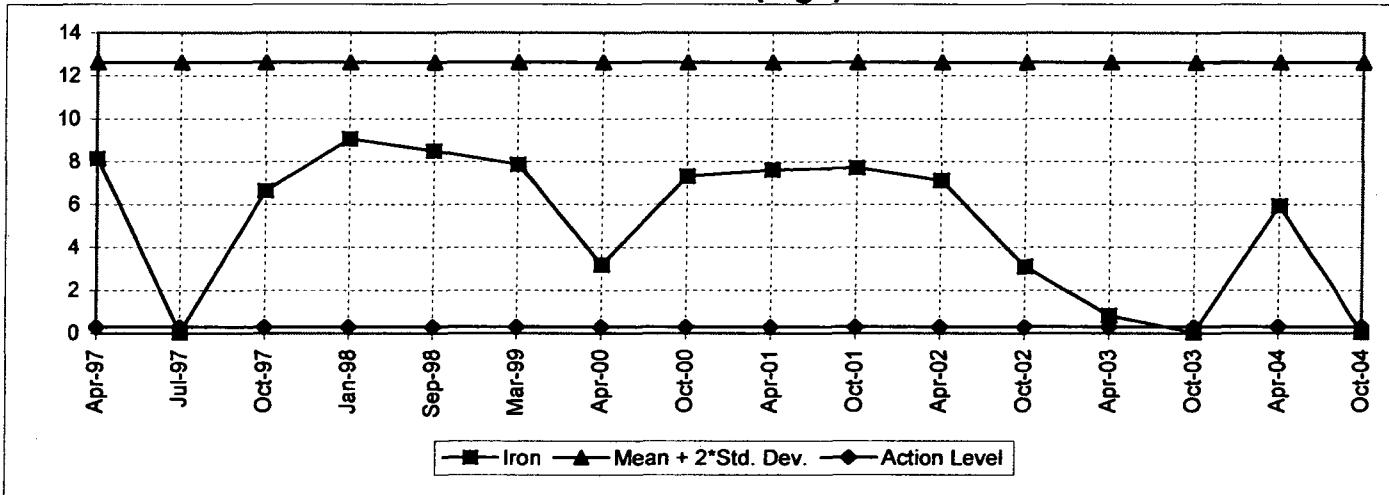
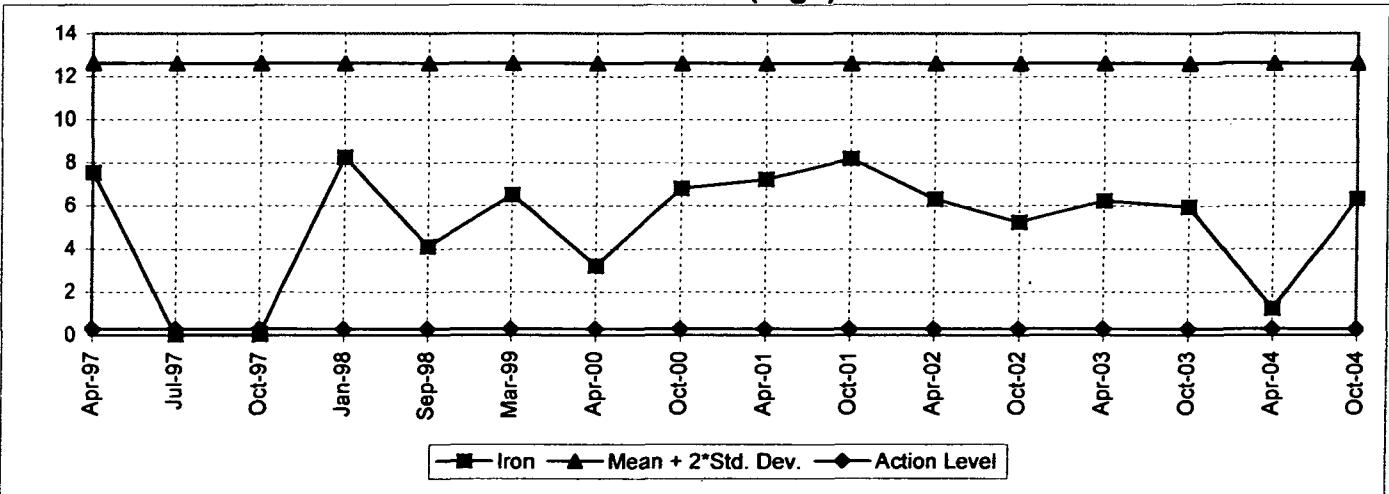
Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-2		MW-92-5	MW-92-7
Apr-97	8.72		8.14	7.54
Jul-97	0.12		<0.03	0.04
Oct-97	2.76		6.65	0.06
Jan-98	9.70		9.06	8.27
Sep-98	8.35		8.50	4.12
Mar-99	8.37		7.86	6.52
Apr-00	0.56		3.20	3.23
Oct-00	<0.03		7.32	6.82
Apr-01	7.06		7.62	7.24
Oct-01	8.06		7.72	8.21
Apr-02	7.62		7.13	6.33
Oct-02	6.33		3.1	5.24
Apr-03	<0.03		0.824	6.24
Oct-03	6.29		<0.030	5.96
Apr-04	7.67		5.95	1.25
Oct-04	7.21		<0.03	6.33

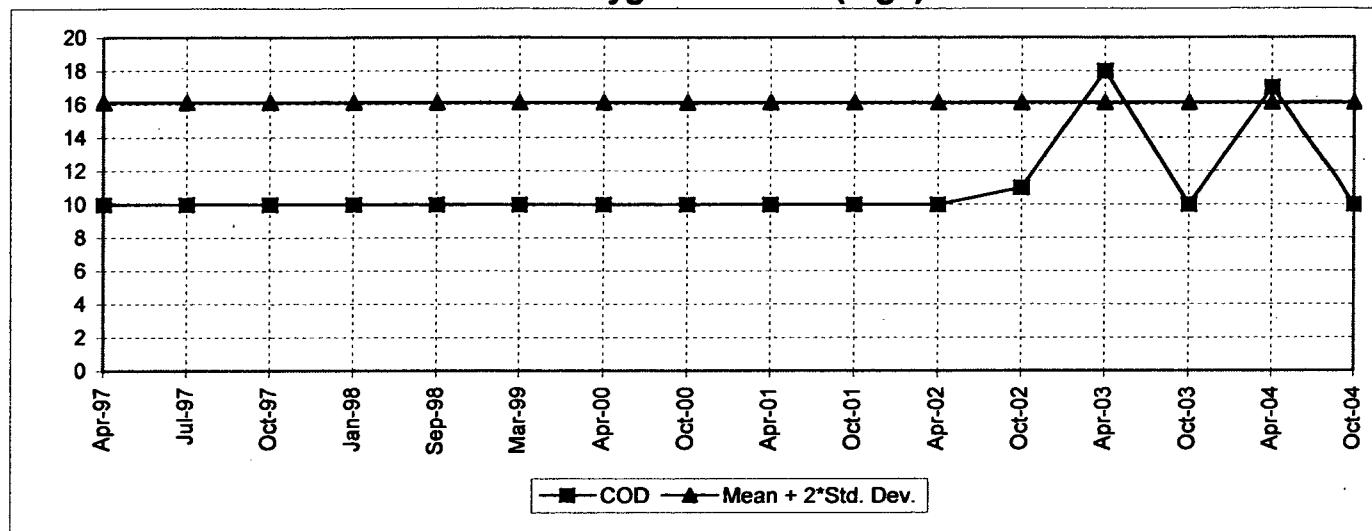
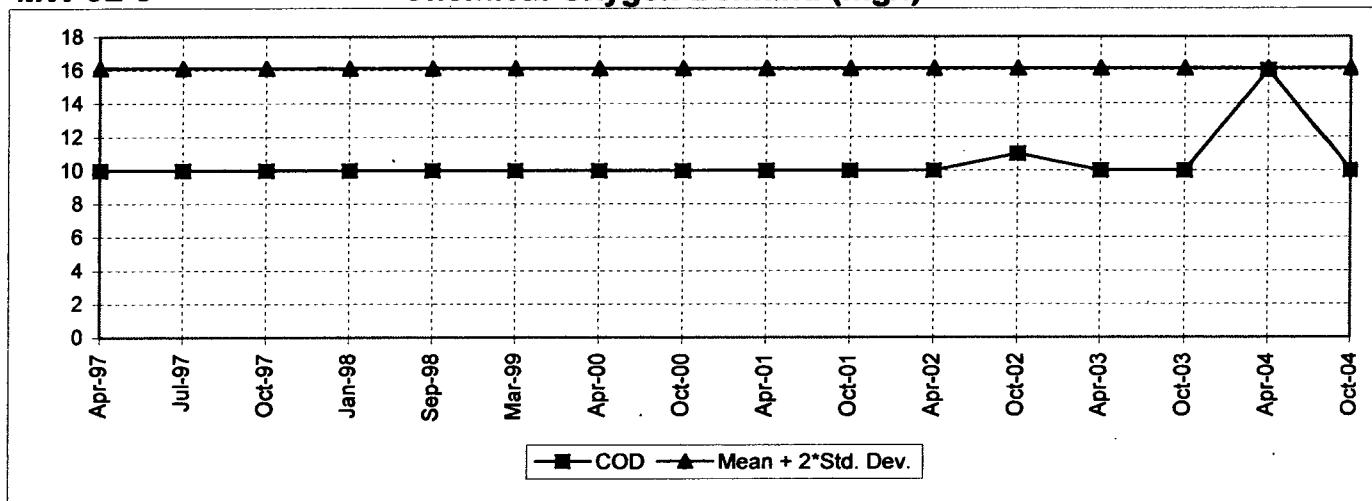
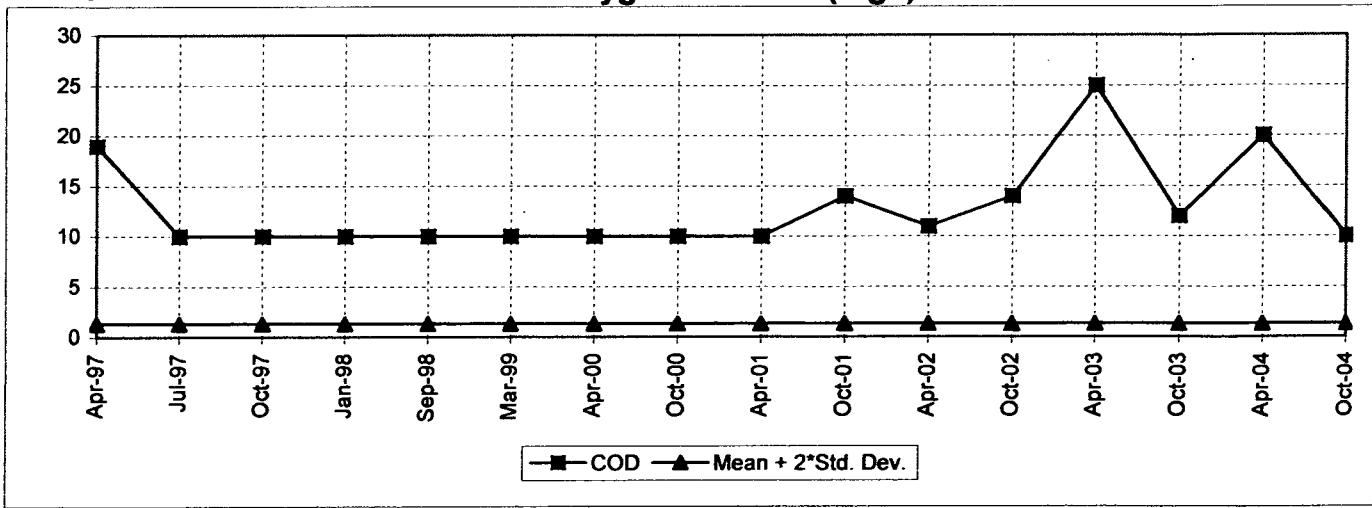
Upgradient Mean + 2(Standard Deviation) = **12.6247** Action Level = **0.3 f action level**

### Chemical Oxygen Demand (mg/l)

Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-2		MW-92-5	MW-92-7
Apr-97	<10		<10	<b>19</b>
Jul-97	<10		<10	<10
Oct-97	<10		<10	<10
Jan-98	<10		<10	<10
Sep-98	<10		<10	<10
Mar-99	<10		<10	<10
Apr-00	<10		<10	<10
Oct-00	<10		<10	<10
Apr-01	<10		<10	<10
Oct-01	<10		<10	14
Apr-02	<10		<10	11
Oct-02	11		11	14
Apr-03	18		<10	<b>25</b>
Oct-03	<10		<10	12
Apr-04	17		16	<b>20</b>
Oct-04	<10		<10	<10

Upgradient Mean + 2(Standard Deviation) = **16.1121** Action Level = **None**

**MW-92-2****Iron (mg/l)****MW-92-5****Iron (mg/l)****MW-92-7****Iron (mg/l)**

**MW-92-2****Chemical Oxygen Demand (mg/l)****MW-92-5****Chemical Oxygen Demand (mg/l)****MW-92-7****Chemical Oxygen Demand (mg/l)**

### Conductance (mS)

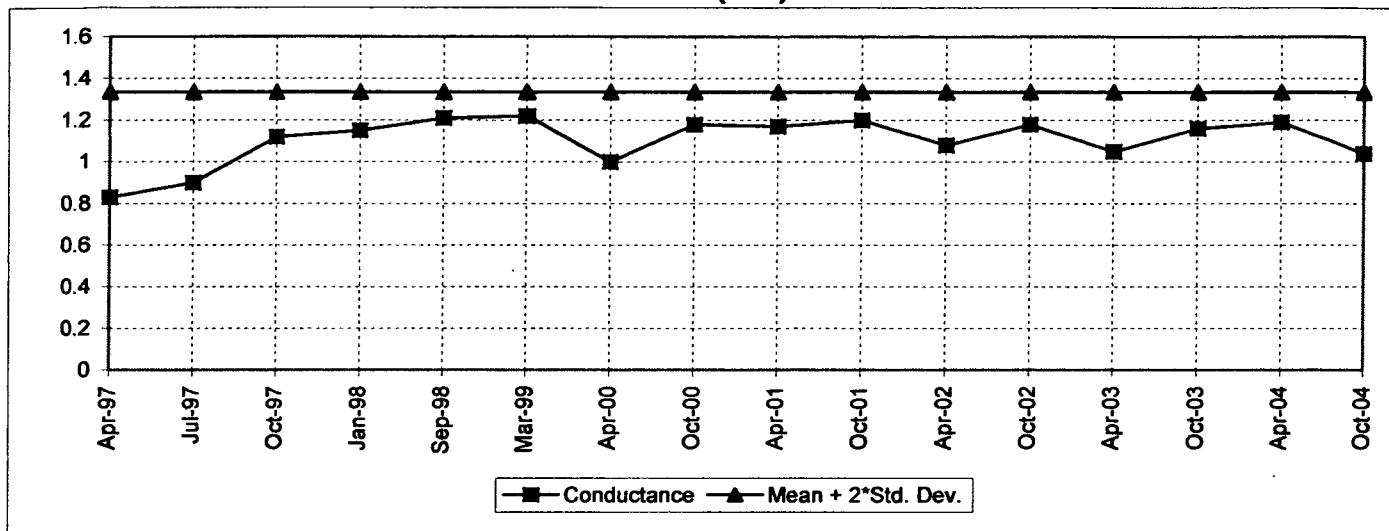
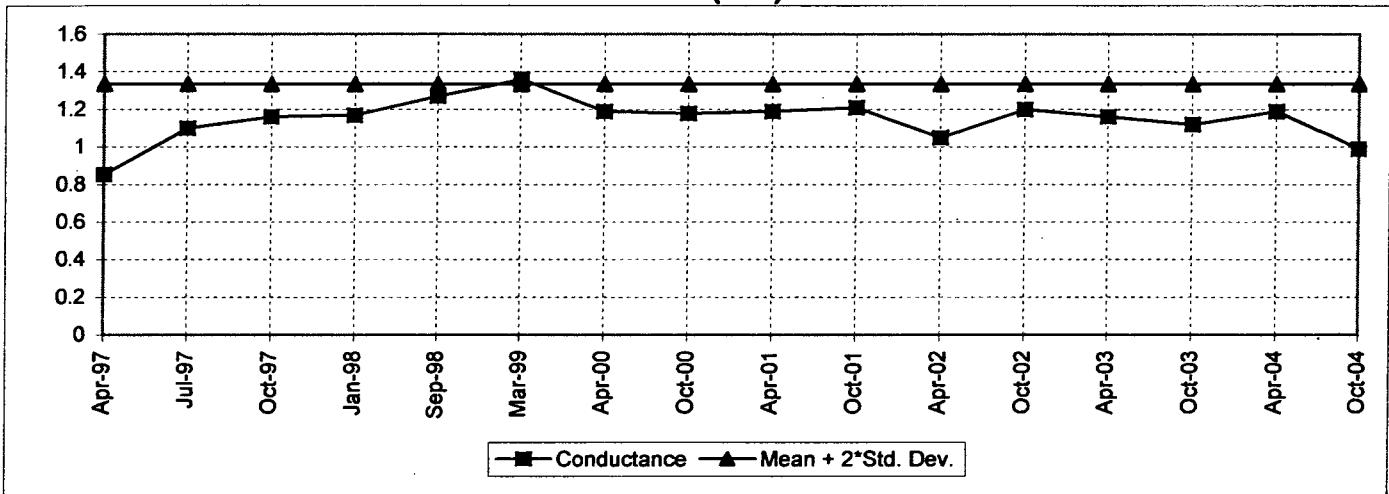
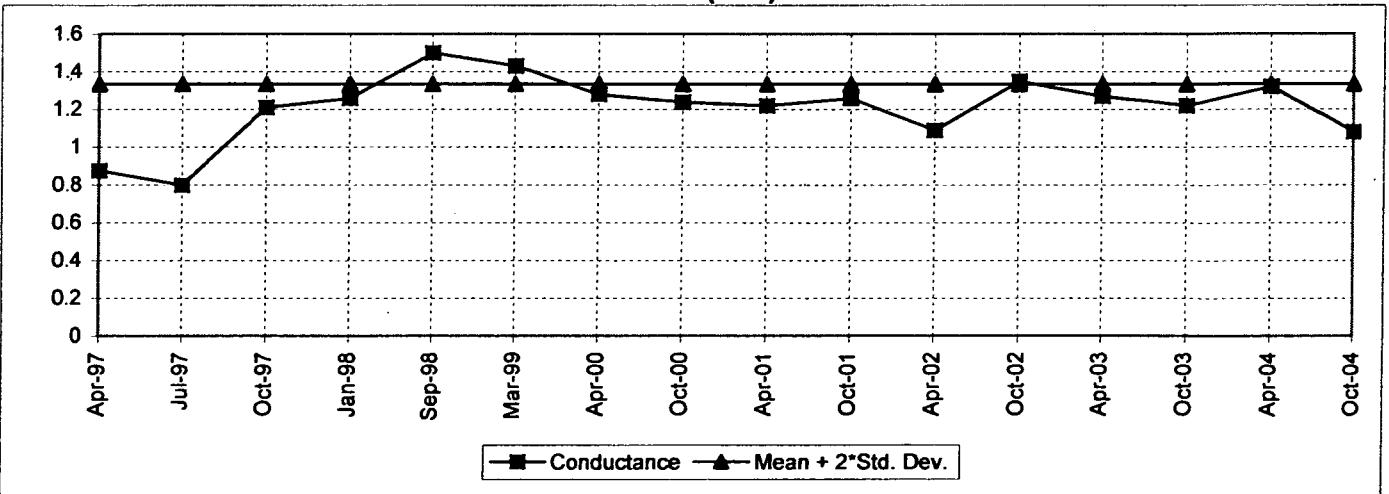
Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-2		MW-92-5	MW-92-7
Apr-97	0.83		0.85	0.88
Jul-97	0.90		1.10	0.80
Oct-97	1.12		1.16	1.21
Jan-98	1.15		1.17	1.26
Sep-98	1.21		1.27	<b>1.50</b>
Mar-99	1.22		1.36	<b>1.43</b>
Apr-00	1.00		1.19	1.28
Oct-00	1.18		1.18	1.24
Apr-01	1.17		1.19	1.22
Oct-01	1.20		1.21	1.26
Apr-02	1.08		1.05	1.09
Oct-02	1.18		1.20	<b>1.35</b>
Apr-03	1.05		1.16	1.27
Oct-03	1.16		1.12	1.22
Apr-04	1.19		1.19	1.32
Oct-04	1.04		0.99	1.08

Upgradient Mean + 2(Standard Deviation) = **1.3347**      Action Level = **None**

### pH

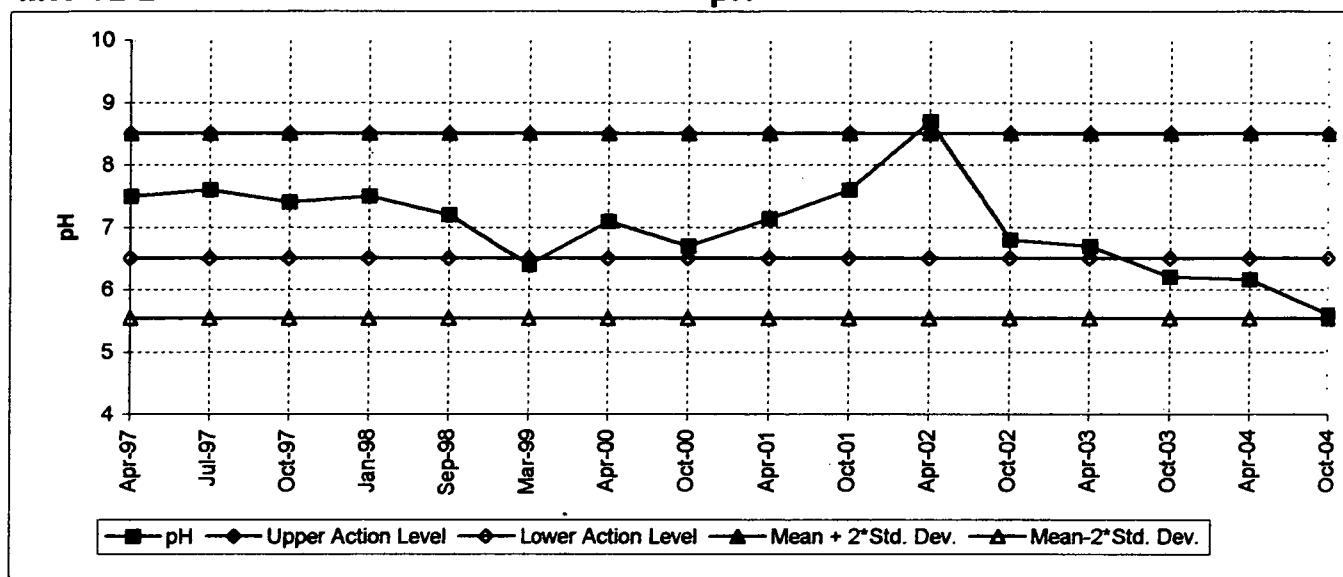
Date	<u>Upgradient</u>		<u>Downgradient</u>	
	MW-92-2		MW-92-5	MW-92-7
Apr-97	7.5		<b>7.3</b>	<b>6.9</b>
Jul-97	7.6		<b>7.2</b>	<b>6.9</b>
Oct-97	7.4		<b>7.7</b>	<b>7.6</b>
Jan-98	7.5		<b>7.2</b>	<b>7.2</b>
Sep-98	7.2		<b>7.2</b>	<b>7.2</b>
Mar-99	6.4		<b>6.8</b>	<b>6.7</b>
Apr-00	7.1		<b>6.8</b>	<b>6.6</b>
Oct-00	6.7		<b>6.8</b>	<b>6.8</b>
Apr-01	7.1		<b>7.4</b>	<b>7.3</b>
Oct-01	7.6		<b>6.7</b>	<b>7.3</b>
Apr-02	8.7		<b>7.3</b>	<b>6.2</b>
Oct-02	6.8		<b>6.8</b>	<b>6.7</b>
Apr-03	6.7		<b>6.9</b>	<b>6.9</b>
Oct-03	6.2		<b>6.5</b>	<b>6.6</b>
Apr-04	6.2		<b>6.3</b>	<b>6.2</b>
Oct-04	5.6		<b>6.8</b>	<b>6.7</b>

Upgradient Mean + 2(Standard Deviation) = **8.4993**      Upper Action Level = **8.5 fSMCL**  
 Upgradient Mean - 2(Standard Deviation) = **5.5382**      Lower Action Level = **6.5 fSMCL**

**MW-92-2****Conductance (mS)****MW-92-5****Conductance (mS)****MW-92-7****Conductance (mS)**

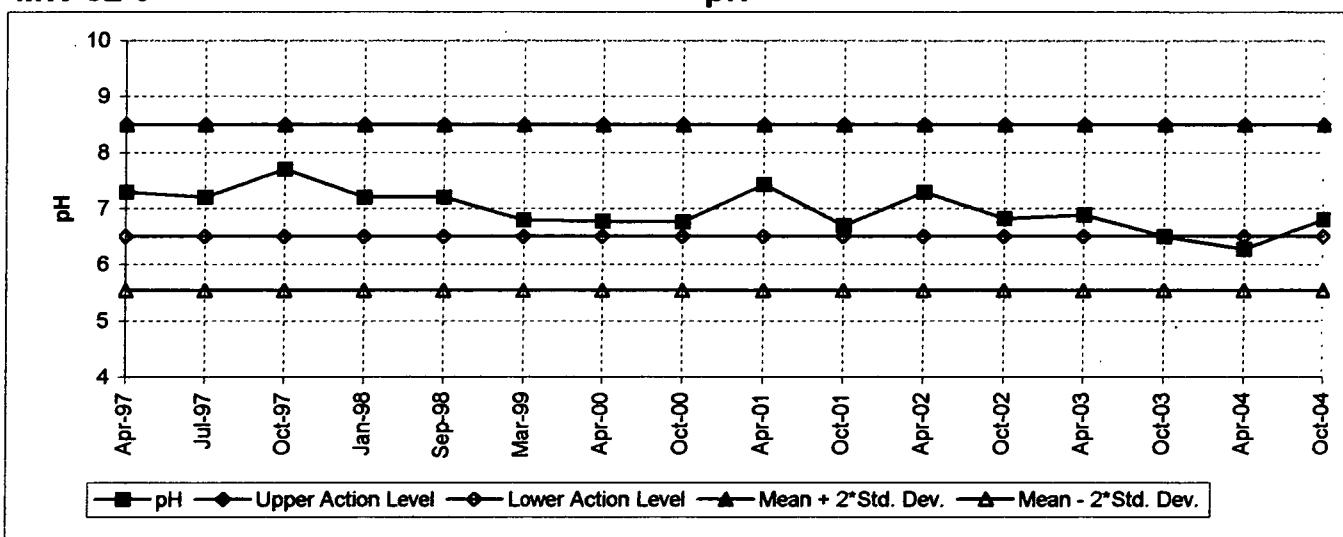
MW-92-2

pH



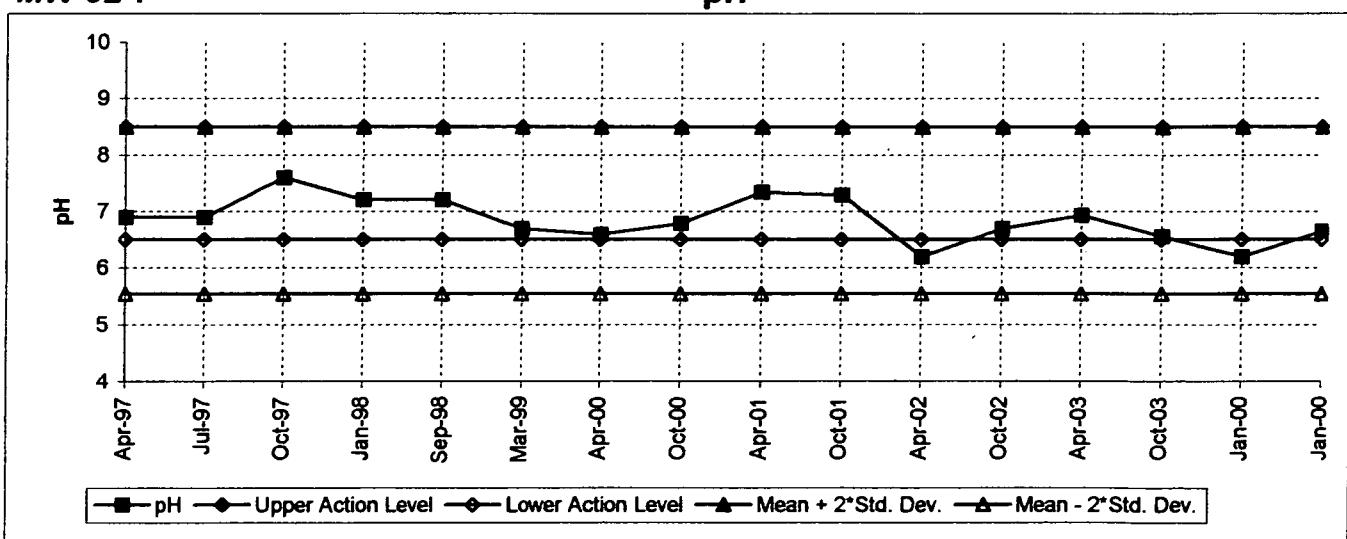
MW-92-5

pH



MW-92-7

pH



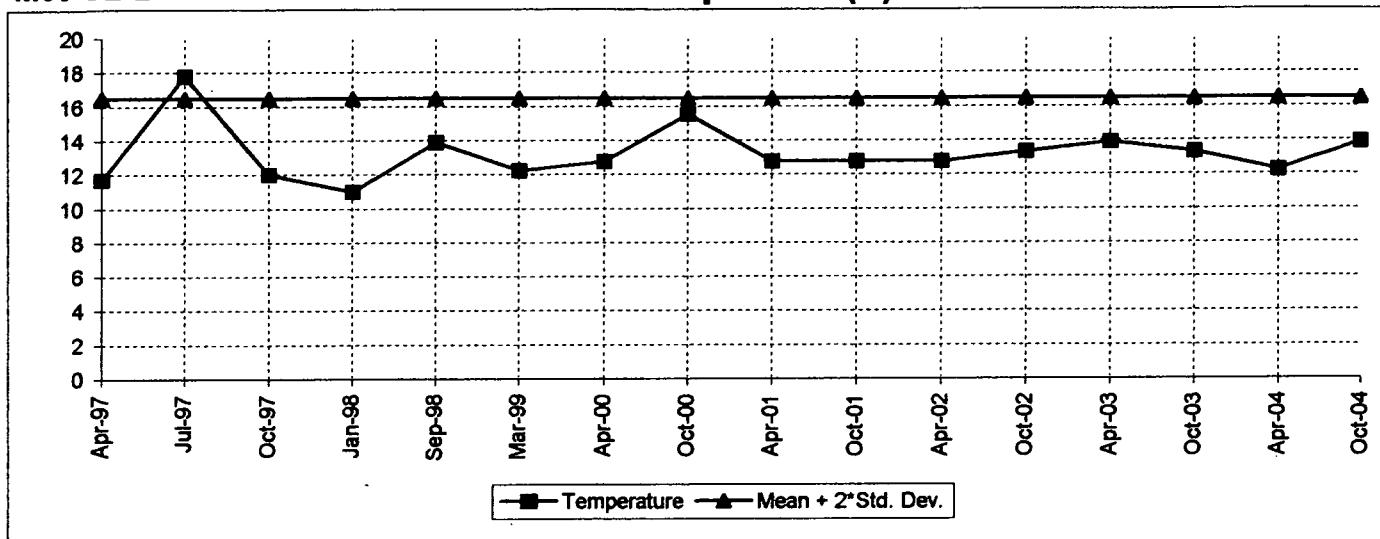
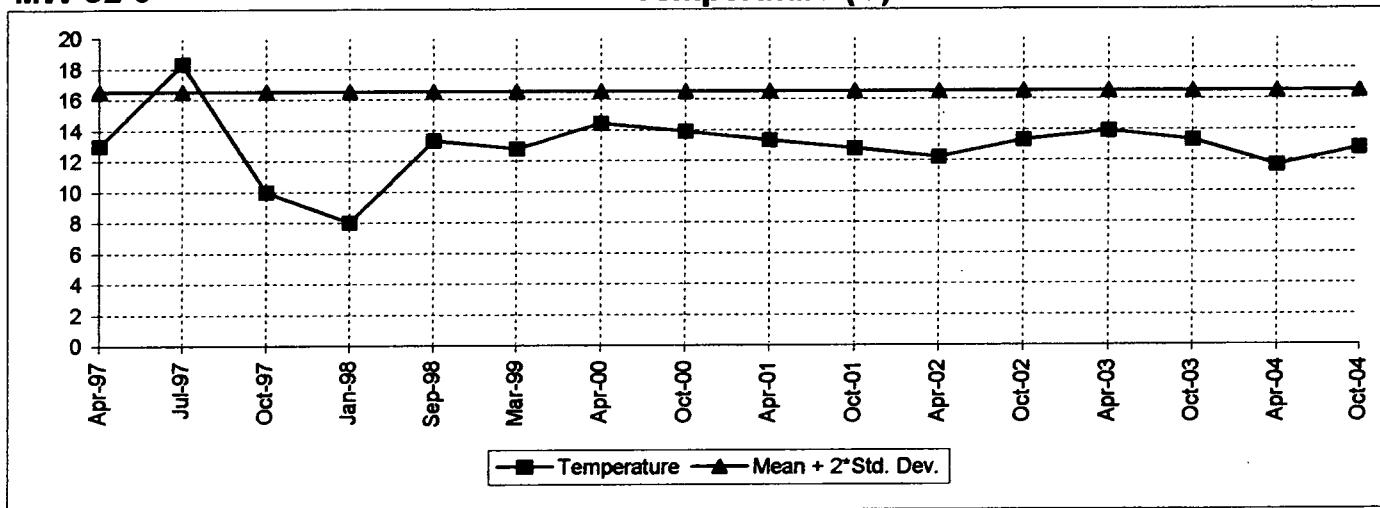
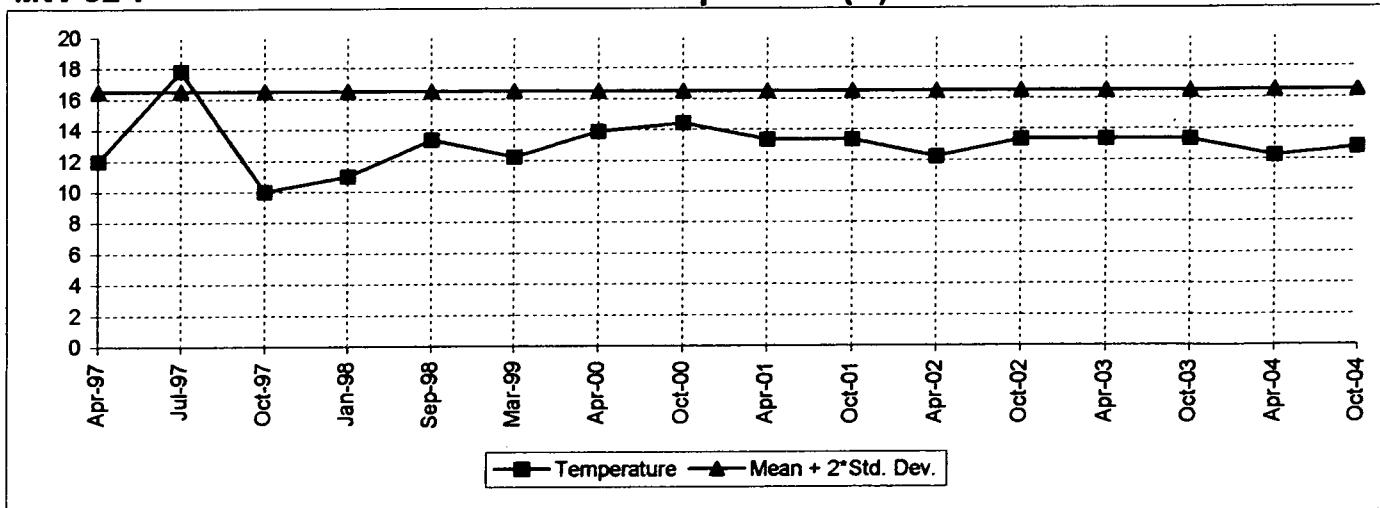
**Temperature (C)**

Date	<u>Upgradient</u>	<u>Downgradient</u>	
	MW-92-2	MW-92-5	MW-92-7
Apr-97	11.70	13.00	12.00
Jul-97	17.80	18.30	17.80
Oct-97	12.00	10.00	10.00
Jan-98	11.00	8.00	11.00
Sep-98	13.88	13.33	13.33
Mar-99	12.22	12.77	12.22
Apr-00	12.77	14.44	13.88
Oct-00	15.55	13.88	14.44
Apr-01	12.77	13.33	13.33
Oct-01	12.77	12.77	13.33
Apr-02	12.77	12.22	12.22
Oct-02	13.33	13.33	13.33
Apr-03	13.88	13.88	13.33
Oct-03	13.33	13.33	13.33
Apr-04	12.22	11.67	12.22
Oct-04	13.89	12.78	12.78

Upgradient Mean + 2(Standard Deviation) = **16.4789**

Action Level =

None

**MW-92-2****Temperature (C)****MW-92-5****Temperature (C)****MW-92-7****Temperature (C)**

**SURFACE WATER SAMPLING RESULTS - 1997 to 2004**  
**Arsenic, Dissolved (mg/L)**

Date	SW-1
Apr-97	0.0013
Jul-97	0.002
Oct-97	0.0029
Jan-98	0.003
Mar-99	<0.001

Upgradient Mean + 2(Standard Deviation) = **0.0039** Action Level = **0.001 dNRL**

**Barium, Dissolved (mg/l)**

Date	SW-1
Apr-97	0.11
Jul-97	0.05
Oct-97	0.099
Jan-98	0.076
Mar-99	0.048

Upgradient Mean + 2(Standard Deviation) = **0.1327** Action Level = **2 fHAL**

**Magnesium, Dissolved (mg/l)**

Date	SW-1
Apr-97	0.68
Jul-97	4
Oct-97	0.25
Jan-98	0.3
Mar-99	2.06

Upgradient Mean + 2(Standard Deviation) = **4.6564** Action Level = **None**

**Zinc, Dissolved (mg/l)**

Date	SW-1
Apr-97	<0.03
Jul-97	0.031
Oct-97	0.033
Jan-98	<0.03
Mar-99	<0.03

Upgradient Mean + 2(Standard Deviation) = **0.0334** Action Level = **2 fHAL**

### **Chloride (mg/l)**

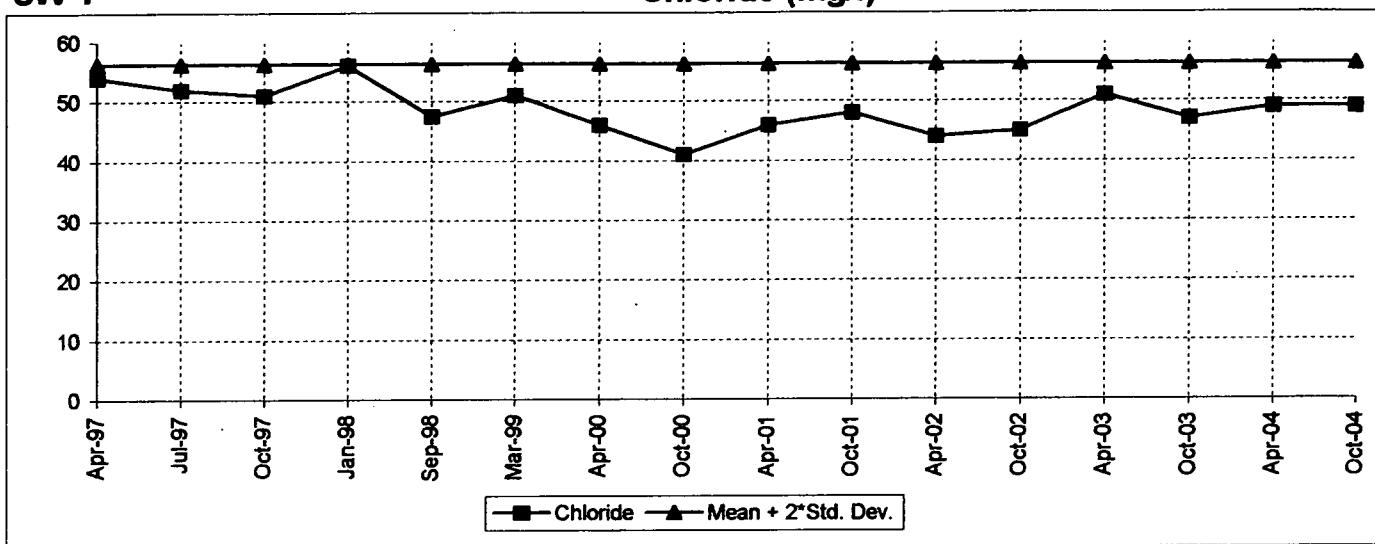
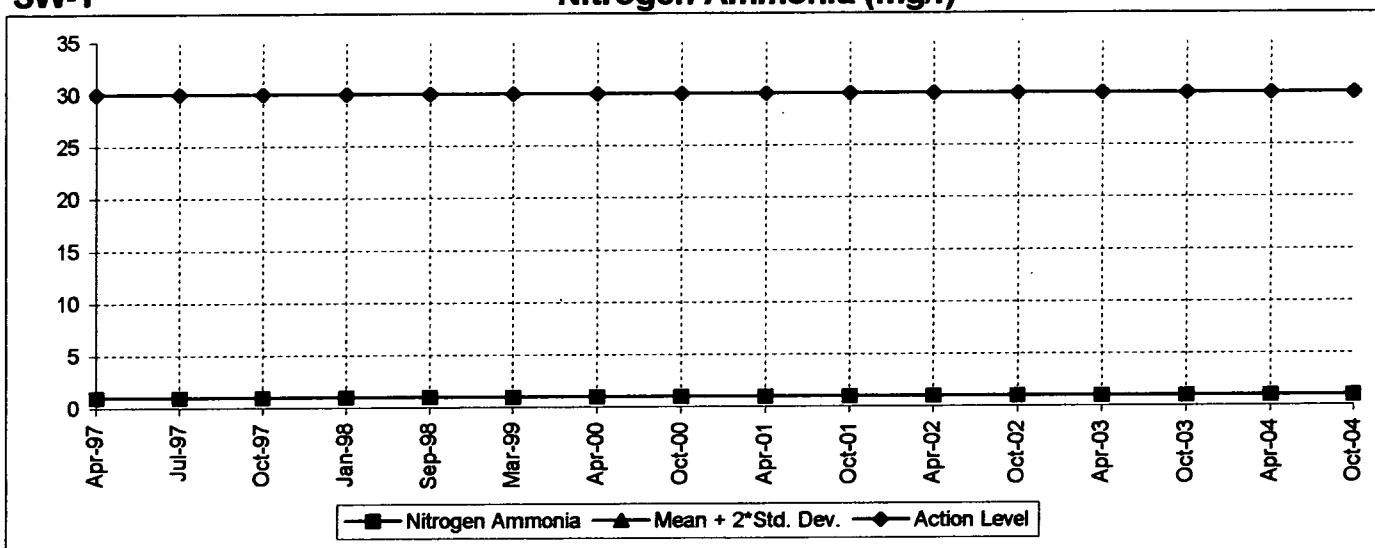
Date	SW-1
Apr-97	54
Jul-97	52
Oct-97	51
Jan-98	56
Sep-98	47.5
Mar-99	51
Apr-00	46
Oct-00	41
Apr-01	46
Oct-01	48
Apr-02	44
Oct-02	45
Apr-03	51
Oct-03	47
Apr-04	49
Oct-04	49

Upgradient Mean + 2(Standard Deviation) = **56.2985** Action Level = **250 fSMCL**

### **Nitrogen, Ammonia (mg/l)**

Date	SW-1
Apr-97	<1
Jul-97	<1
Oct-97	<1
Jan-98	<1
Sep-98	<1
Mar-99	<1
Apr-00	<1
Oct-00	<1
Apr-01	<1
Oct-01	<1
Apr-02	<1
Oct-02	<1
Apr-03	<1
Oct-03	<1
Apr-04	<1
Oct-04	<1

Upgradient Mean + 2(Standard Deviation) = **1.0000** Action Level = **30 f action level**

**SW-1****Chloride (mg/l)****SW-1****Nitrogen Ammonia (mg/l)**

### **Iron, Dissolved (mg/l)**

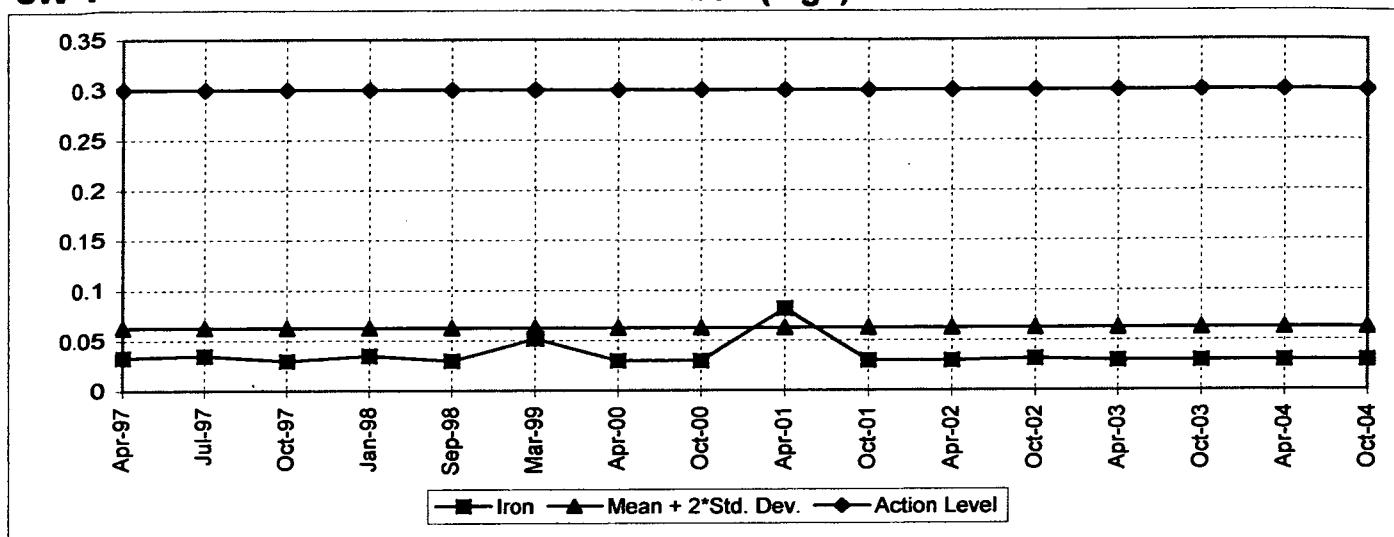
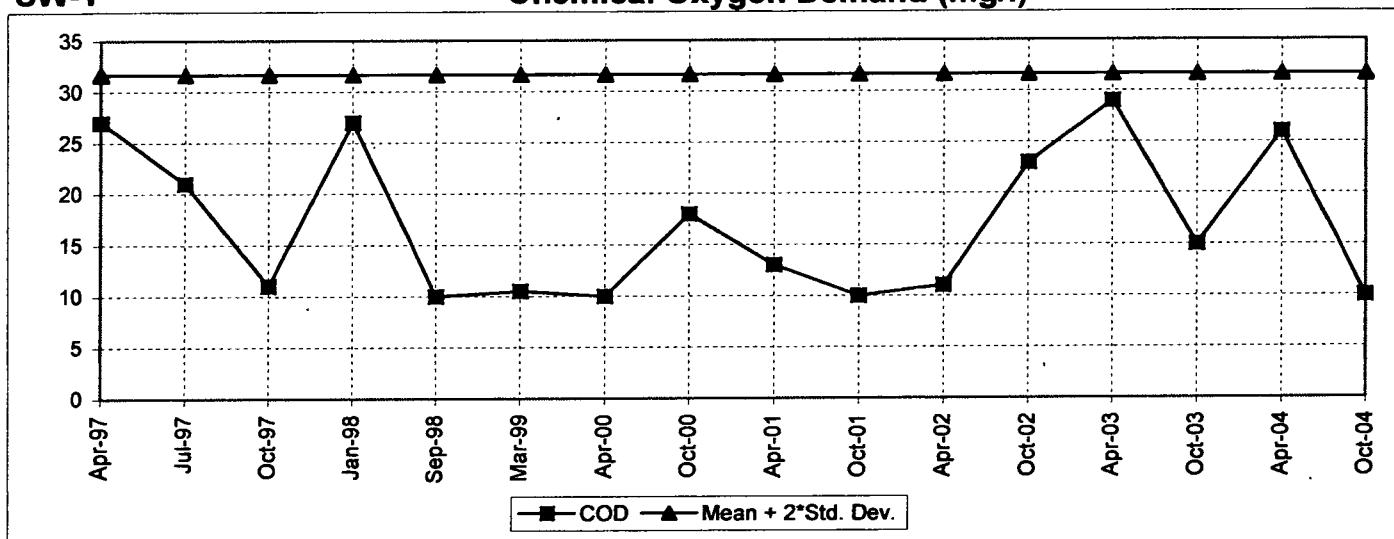
Date	SW-1
Apr-97	0.033
Jul-97	0.035
Oct-97	<0.03
Jan-98	<0.035
Sep-98	<0.03
Mar-99	0.052
Apr-00	<0.03
Oct-00	<0.03
Apr-01	<b>0.082</b>
Oct-01	<0.03
Apr-02	<0.03
Oct-02	0.032
Apr-03	<0.030
Oct-03	<0.030
Apr-04	<0.03
Oct-04	<0.03

Upgradient Mean + 2(Standard Deviation) = **0.0627** Action Level = 0.3 f action level

### **Chemical Oxygen Demand (mg/l)**

Date	SW-1
Apr-97	27
Jul-97	21
Oct-97	11
Jan-98	27
Sep-98	<10
Mar-99	10.5
Apr-00	<10
Oct-00	18
Apr-01	13
Oct-01	<10
Apr-02	11
Oct-02	23
Apr-03	29
Oct-03	15
Apr-04	26
Oct-04	<10

Upgradient Mean + 2(Standard Deviation) = **31.6497** Action Level = None

**SW-1****Iron (mg/l)****SW-1****Chemical Oxygen Demand (mg/l)**

### Conductance (mS)

Date	SW-1
Apr-97	0.54
Jul-97	0.58
Oct-97	0.63
Jan-98	0.54
Sep-98	0.50
Mar-99	0.54
Apr-00	0.53
Oct-00	0.49
Apr-01	0.51
Oct-01	0.57
Apr-02	0.48
Oct-02	0.81
Apr-03	0.93
Oct-03	0.86
Apr-04	0.88
Oct-04	1.25

Upgradient Mean + 2(Standard Deviation) = **1.1023**

Action Level = None

### pH

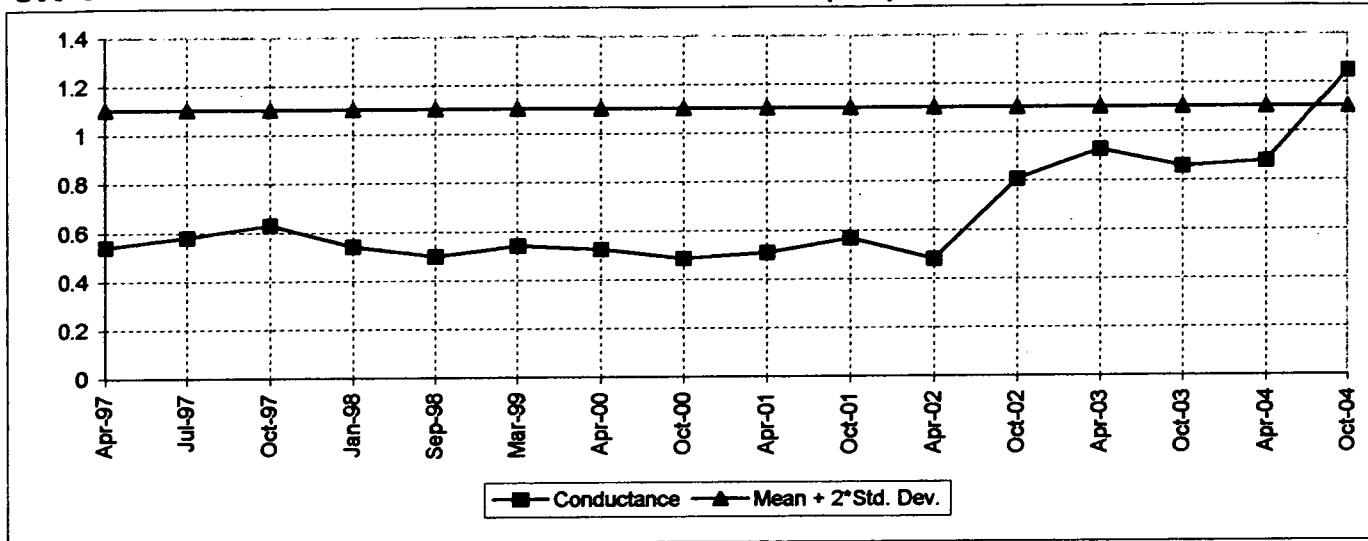
Date	SW-1
Apr-97	11.4
Jul-97	10.1
Oct-97	11.2
Jan-98	11.8
Sep-98	9.5
Mar-99	9.8
Apr-00	9.8
Oct-00	6.2
Apr-01	8.7
Oct-01	8.3
Apr-02	11.3
Oct-02	11.22
Apr-03	11.34
Oct-03	10.65
Apr-04	10.29
Oct-04	9.42

Upgradient Mean + 2(Standard Deviation) = **12.9824**    Upper Action Level = **8.5 fSMCL**

Upgradient Mean - 2(Standard Deviation) = **7.1414**    Lower Action Level = **6.5 fSMCL**

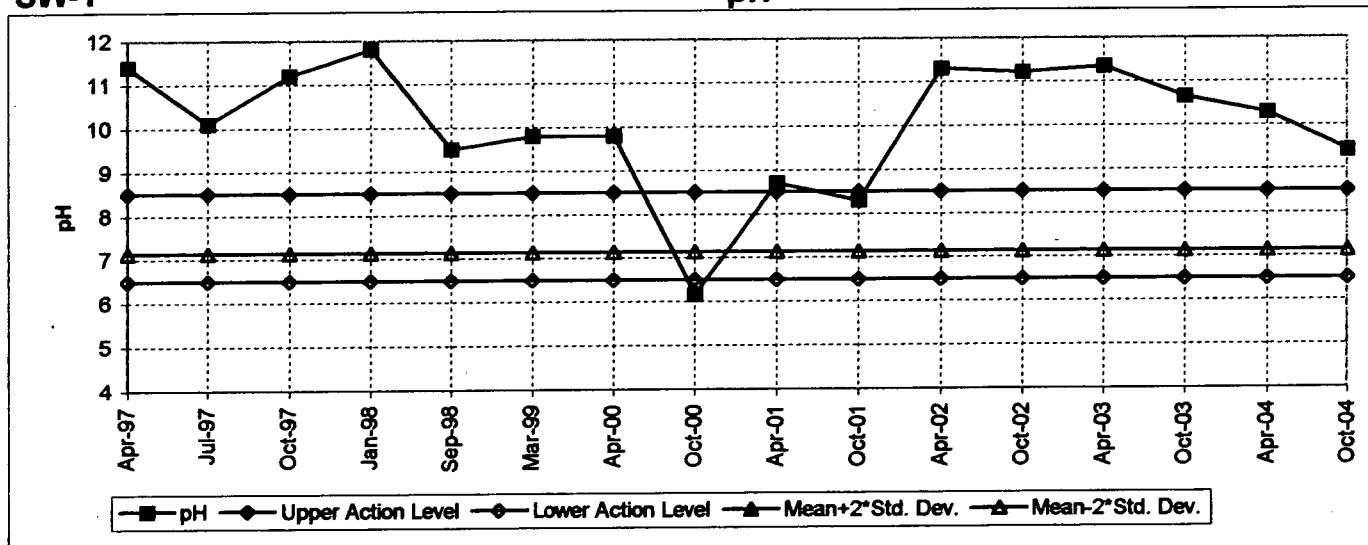
**SW-1**

### Conductance (mS)



**SW-1**

### pH



### Temperature (C)

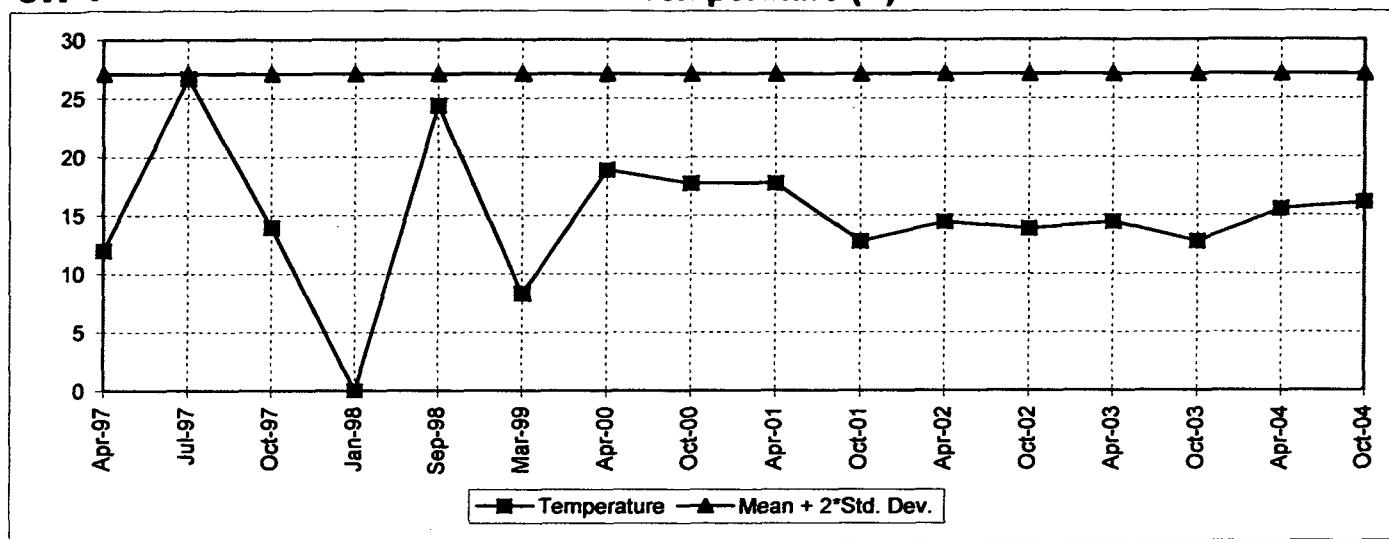
Date	SW-1
Apr-97	12.00
Jul-97	26.70
Oct-97	14.00
Jan-98	0.00
Sep-98	24.40
Mar-99	8.33
Apr-00	18.88
Oct-00	17.77
Apr-01	17.77
Oct-01	12.78
Apr-02	14.44
Oct-02	13.88
Apr-03	14.44
Oct-03	12.77
Apr-04	15.56
Oct-04	16.11

Upgradient Mean + 2(Standard Deviation) = **27.0831**

Action Level = **None**

**SW-1**

**Temperature (C)**



**APPENDIX - 4**  
**IDNR SAMPLING FORMS**

**FORM FOR GROUNDWATER SAMPLING AND/OR  
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-1 Upgradient X  
Downgradient \_\_\_\_\_

Name of person sampling Wayne Shannon

**A. MONITORING WELL/PIEZOMETER CONDITIONS**

Well/Piezometer Properly Capped? Yes Standing Water or Litter No  
If no, explain \_\_\_\_\_ If yes, explain \_\_\_\_\_

**B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)**

Elevation: Top of inner well casing \_\_\_\_\_ Ground Elevation \_\_\_\_\_  
Depth of well 26.48' Inside Casing Diameter (in inches) 2  
Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>4/30/04 @ 14:00</u>	<u>18.95</u>	_____
After Purging	<u>4/30/04 @ 15:15</u>	<u>18.95</u>	_____
Before Sampling	<u>4/30/04 @ 15:20</u>	<u>18.95</u>	_____

**\*C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 4  
No. of Well Volumes (based on current water level) 3  
Was the well pumped/bailed dry? No

Equipment used:

Bailer type <u>Disposable</u>	Dedicated Bailer? <u>Yes</u>
Pump type _____	Dedicated Pump? _____
If not dedicated, method of cleaning _____	

**\*D. FIELD MEASUREMENT**

Weather Conditions Cloudy 50s

Field Measurements (after stabilization):

Temperature <u>52</u>	Units <u>°F</u>
Equipment used <u>Glass Thermometer</u>	
pH <u>5.94</u>	
Equipment used <u>pH Tester II</u>	
Specific Conditions <u>1068</u>	Units <u>µs/cm</u>
Equipment used <u>Orion 124 (make &amp; model)</u>	

Comments \_\_\_\_\_

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

\*Omit if only measuring groundwater elevations

**FORM FOR GROUNDWATER SAMPLING AND/OR  
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-1R Upgradient X  
Downgradient \_\_\_\_\_

Name of person sampling Wayne Shanon

**A. MONITORING WELL/PIEZOMETER CONDITIONS**

Well/Piezometer Properly Capped? Yes Standing Water or Litter No  
If no, explain \_\_\_\_\_ If yes, explain \_\_\_\_\_

**B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)**

Elevation : Top of inner well casing \_\_\_\_\_ Ground Elevation \_\_\_\_\_  
Depth of well 24.08' Inside Casing Diameter (in inches) 2  
Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>4/30/04 @ 13:05</u>	<u>12.38</u>	_____
After Purging	<u>4/30/04 @ 13:30</u>	<u>12.38</u>	_____
Before Sampling	<u>4/30/04 @ 13:30</u>	<u>12.38</u>	_____

**\*C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 6  
No. of Well Volumes (based on current water level) 3  
Was the well pumped/bailed dry? No

Equipment used:

Bailer type Disposable Dedicated Bailer? Yes  
Pump type \_\_\_\_\_ Dedicated Pump? \_\_\_\_\_  
If not dedicated, method of cleaning \_\_\_\_\_

**\*D. FIELD MEASUREMENT**

Weather Conditions Cloudy drizzling 50s

Field Measurements (after stabilization):

Temperature	<u>53</u>	Units <u>°F</u>
Equipment used	<u>Glass Thermometer</u>	
pH	<u>5.98</u>	
Equipment used	<u>pH Tester II</u>	
Specific Conditions	<u>1349</u>	Units <u>µs/cm</u>
Equipment used	<u>Orion 124 (make &amp; model)</u>	

Comments \_\_\_\_\_

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

\*Omit if only measuring groundwater elevations

**FORM FOR GROUNDWATER SAMPLING AND/OR  
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-2 Upgradient X  
Downgradient \_\_\_\_\_

Name of person sampling Wayne Shannon

**A. MONITORING WELL/PIEZOMETER CONDITIONS**

Well/Piezometer Properly Capped? Yes Standing Water or Litter No  
If no, explain \_\_\_\_\_ If yes, explain \_\_\_\_\_

**B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)**

Elevation : Top of inner well casing \_\_\_\_\_ Ground Elevation \_\_\_\_\_  
Depth of well 62.57' Inside Casing Diameter (in inches) 2  
Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>4/30/04 @ 14:00</u>	<u>19.63</u>	_____
After Purging	<u>4/30/04 @ 14:50</u>	<u>19.63</u>	_____
Before Sampling	<u>4/30/04 @ 14:55</u>	<u>19.63</u>	_____

**\*C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 21  
No. of Well Volumes (based on current water level) 3  
Was the well pumped/bailed dry? No

Equipment used:

Bailer type Disposable Dedicated Bailer? Yes  
Pump type \_\_\_\_\_ Dedicated Pump? \_\_\_\_\_  
If not dedicated, method of cleaning \_\_\_\_\_

**\*D. FIELD MEASUREMENT**

Weather Conditions Cloudy 50s

Field Measurements (after stabilization):

Temperature	<u>54</u>	Units <u>°F</u>
Equipment used	<u>Glass Thermometer</u>	
pH	<u>6.16</u>	
Equipment used	<u>pH Tester II</u>	
Specific Conditions	<u>1198</u>	Units <u>µs/cm</u>
Equipment used	<u>Orion 124 (make &amp; model)</u>	

Comments \_\_\_\_\_

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

\*Omit if only measuring groundwater elevations

**FORM FOR GROUNDWATER SAMPLING AND/OR  
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-3 Upgradient \_\_\_\_\_  
Downgradient \_\_\_\_\_

Name of person sampling Wayne Shannon

**A. MONITORING WELL/PIEZOMETER CONDITIONS**

Well/Piezometer Property Capped? Yes Standing Water or Litter No  
If no, explain \_\_\_\_\_ If yes, explain \_\_\_\_\_

**B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)**

Elevation : Top of inner well casing \_\_\_\_\_ Ground Elevation \_\_\_\_\_  
Depth of well 25.61' Inside Casing Diameter (in inches) 2  
Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>4/30/04 @ 12:35</u>	<u>20.77</u>	_____
After Purging	<u>4/30/04 @ 12:50</u>	<u>20.77</u>	_____
Before Sampling	<u>4/30/04 @ 12:55</u>	<u>20.77</u>	_____

**\*C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 3  
No. of Well Volumes (based on current water level) 3  
Was the well pumped/bailed dry? No

Equipment used:

Bailer type Disposable Dedicated Bailer? Yes  
Pump type \_\_\_\_\_ Dedicated Pump? \_\_\_\_\_  
If not dedicated, method of cleaning \_\_\_\_\_

**\*D. FIELD MEASUREMENT**

Weather Conditions Cloudy 50s

Field Measurements (after stabilization):

Temperature	<u>53</u>	Units <u>°F</u>
Equipment used	<u>Glass Thermometer</u>	
pH	<u>6.28</u>	
Equipment used	<u>pH Tester II</u>	
Specific Conditions	<u>1265</u>	Units <u>µs/cm</u>
Equipment used	<u>Orion 124 (make &amp; model)</u>	

Comments \_\_\_\_\_

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

\*Omit if only measuring groundwater elevations

**FORM FOR GROUNDWATER SAMPLING AND/OR  
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-4 Upgradient \_\_\_\_\_  
Downgradient X

Name of person sampling Wayne Shanon

**A. MONITORING WELL/PIEZOMETER CONDITIONS**

Well/Piezometer Property Capped? Yes Standing Water or Litter No  
If no, explain \_\_\_\_\_ If yes, explain \_\_\_\_\_

**B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)**

Elevation : Top of inner well casing \_\_\_\_\_ Ground Elevation \_\_\_\_\_  
Depth of well 29.65' Inside Casing Diameter (in inches) 2  
Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>4/30/04 @ 10:40</u>	<u>22.61</u>	_____
After Purging	<u>4/30/04 @ 11:55</u>	<u>22.61</u>	_____
Before Sampling	<u>4/30/04 @ 12:00</u>	<u>22.61</u>	_____

**\*C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 4  
No. of Well Volumes (based on current water level) 3  
Was the well pumped/bailed dry? No

Equipment used:

Bailer type <u>Disposable</u>	Dedicated Bailer? <u>Yes</u>
Pump type _____	Dedicated Pump? _____
If not dedicated, method of cleaning _____	

**\*D. FIELD MEASUREMENT**

Weather Conditions Cloudy 50s

Field Measurements (after stabilization):

Temperature <u>53</u>	Units <u>°F</u>
Equipment used <u>Glass Thermometer</u>	
pH <u>6.46</u>	
Equipment used <u>pH Tester II</u>	
Specific Conditions <u>638</u>	Units <u>µs/cm</u>
Equipment used <u>Orion 124 (make &amp; model)</u>	

Comments \_\_\_\_\_

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

\*Omit if only measuring groundwater elevations

**FORM FOR GROUNDWATER SAMPLING AND/OR  
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-5 Upgradient \_\_\_\_\_  
Downgradient X

Name of person sampling Wayne Shannon

**A. MONITORING WELL/PIEZOMETER CONDITIONS**

Well/Piezometer Properly Capped? Yes Standing Water or Litter No  
If no, explain \_\_\_\_\_ If yes, explain \_\_\_\_\_

**B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)**

Elevation : Top of inner well casing \_\_\_\_\_ Ground Elevation \_\_\_\_\_  
Depth of well 68.12' Inside Casing Diameter (in inches) 2  
Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>4/30/04 @ 10:35</u>	<u>22.79</u>	_____
After Purging	<u>4/30/04 @ 11:30</u>	<u>22.79</u>	_____
Before Sampling	<u>4/30/04 @ 11:35</u>	<u>22.79</u>	_____

**\*C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 22  
No. of Well Volumes (based on current water level) 3  
Was the well pumped/bailed dry? No

Equipment used:

Bailer type <u>Disposable</u>	Dedicated Bailer? <u>Yes</u>
Pump type _____	Dedicated Pump? _____
If not dedicated, method of cleaning _____	

**\*D. FIELD MEASUREMENT**

Weather Conditions Cloudy 50s

Field Measurements (after stabilization):

Temperature <u>53</u>	Units <u>°F</u>
Equipment used <u>Glass Thermometer</u>	
pH <u>6.28</u>	
Equipment used <u>pH Tester II</u>	
Specific Conditions <u>1198</u>	Units <u>µs/cm</u>
Equipment used <u>Orion 124 (make &amp; model)</u>	

Comments \_\_\_\_\_

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

\*Omit if only measuring groundwater elevations

**FORM FOR GROUNDWATER SAMPLING AND/OR  
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-6 Upgradient \_\_\_\_\_  
Downgradient X

Name of person sampling Wayne Shanon

**A. MONITORING WELL/PIEZOMETER CONDITIONS**

Well/Piezometer Properly Capped? Yes Standing Water or Litter No  
If no, explain \_\_\_\_\_ If yes, explain \_\_\_\_\_

**B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)**

Elevation : Top of inner well casing \_\_\_\_\_ Ground Elevation \_\_\_\_\_  
Depth of well 33.42' Inside Casing Diameter (in inches) 2  
Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>4/30/04 @ 8:50</u>	<u>24.65</u>	_____
After Purging	<u>4/30/04 @ 9:20</u>	<u>24.65</u>	_____
Before Sampling	<u>4/30/04 @ 9:30</u>	<u>24.65</u>	_____

**\*C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 5  
No. of Well Volumes (based on current water level) 3  
Was the well pumped/bailed dry? No

Equipment used:

Bailer type	<u>Disposable</u>	Dedicated Bailer?	<u>Yes</u>
Pump type	_____	Dedicated Pump?	_____
If not dedicated, method of cleaning _____			

**\*D. FIELD MEASUREMENT**

Weather Conditions Cloudy 50s

Field Measurements (after stabilization):

Temperature	<u>54</u>	Units	<u>°F</u>
Equipment used	<u>Glass Thermometer</u>		
pH	<u>6.65</u>	_____	
Equipment used	<u>pH Tester II</u>		
Specific Conditions	<u>1232</u>	Units	<u>µs/cm</u>
Equipment used	<u>Orion 124 (make &amp; model)</u>		

Comments \_\_\_\_\_

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

\*Omit if only measuring groundwater elevations

**FORM FOR GROUNDWATER SAMPLING AND/OR  
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-7 Upgradient \_\_\_\_\_  
Downgradient X

Name of person sampling Wayne Shannon

**A. MONITORING WELL/PIEZOMETER CONDITIONS**

Well/Piezometer Properly Capped? Yes Standing Water or Litter No  
If no, explain \_\_\_\_\_ If yes, explain \_\_\_\_\_

**B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)**

Elevation : Top of inner well casing \_\_\_\_\_ Ground Elevation \_\_\_\_\_  
Depth of well 69.48' Inside Casing Diameter (in inches) 2  
Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>4/30/04 @ 8:55</u>	<u>24.87</u>	_____
After Purging	<u>4/30/04 @ 10:25</u>	<u>24.87</u>	_____
Before Sampling	<u>4/30/04 @ 10:30</u>	<u>24.87</u>	_____

**\*C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 22  
No. of Well Volumes (based on current water level) 3  
Was the well pumped/bailed dry? No

Equipment used:

Bailer type <u>Disposable</u>	Dedicated Bailer? <u>Yes</u>
Pump type _____	Dedicated Pump? _____
If not dedicated, method of cleaning _____	

**\*D. FIELD MEASUREMENT**

Weather Conditions Cloudy 50s

Field Measurements (after stabilization):

Temperature <u>54</u>	Units <u>°F</u>
Equipment used <u>Glass Thermometer</u>	
pH <u>6.20</u>	
Equipment used <u>pH Tester II</u>	
Specific Conductance <u>1328</u>	Units <u>µs/cm</u>
Equipment used <u>Orion 124 (make &amp; model)</u>	

Comments \_\_\_\_\_

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

\*Omit if only measuring groundwater elevations

**FORM FOR  
SURFACE WATER SAMPLING**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P  
 Surface Monitoring point No. SW-1 Date/Time 4/30/04 @ 13:50  
 Name of Person Sampling Wayne Shannon

**A. TYPE OF MONITORING POINT**

Stream	<u>                </u>	Open Tile	<u>                </u>
Road Ditch	<u>                </u>	Tile with Riser	<u>                </u>
Drainage Ditch	<u>                </u>	Other	<u>Pond</u>

**B. PURPOSE OF MONITORING POINT**

Upstream	<u>                </u>	Downstream	<u>                </u>
Within Landfill	<u>X</u>	Other	<u>                </u>

**C. MOINITORING POINT CONDITIONS**

General description/condition of monitoring point \_\_\_\_\_  
 \_\_\_\_\_

Was monitoring point dry?	<u>No</u>	Too little water to sample?	<u>No</u>
Was water flowing?	<u>No</u>	If yes, estimate quantity	<u>                </u>
		If yes, estimate depth	<u>                </u>

Was water discolored?	<u>No</u>	If yes, describe below.
Does water have odor?	<u>No</u>	If yes, describe below.
Was ground discolored?	<u>No</u>	If yes, describe below.
Litter present?	<u>No</u>	If yes, describe below.

Comments \_\_\_\_\_  
 \_\_\_\_\_

**D. FIELD MEASUREMENTS**

Weather Conditions Cloudy 50's

Field Measurements (after stabilization):

Temperature	<u>60</u>	Units	<u>°F</u>
Equipment used	<u>Glass Thermometer</u>		
pH	<u>10.29</u>		
Equipment used	<u>pH Tester II</u>		
Specific Conditions	<u>880</u>	Units	<u>µs/cm</u>
Equipment used	<u>Orion (make) 124 (model)</u>		

Comments \_\_\_\_\_

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

\*Omit if only measuring groundwater elevations

**FORM FOR GROUNDWATER SAMPLING AND/OR  
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-1 Upgradient X  
Downgradient \_\_\_\_\_

Name of person sampling Wayne Shannon

**A. MONITORING WELL/PIEZOMETER CONDITIONS**

Well/Piezometer Properly Capped? Yes Standing Water or Litter No  
If no, explain \_\_\_\_\_ If yes, explain \_\_\_\_\_

**B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)**

Elevation: Top of inner well casing \_\_\_\_\_ Ground Elevation \_\_\_\_\_  
Depth of well 26.67' Inside Casing Diameter (in inches) 2  
Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>10/13/04 @ 15:25</u>	<u>18.17</u>	_____
After Purging	<u>10/13/04 @ 15:50</u>	<u>18.17</u>	_____
Before Sampling	<u>10/13/04 @ 16:10</u>	<u>18.17</u>	_____

**\*C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 4  
No. of Well Volumes (based on current water level) 3  
Was the well pumped/bailed dry? No

Equipment used:

Bailer type <u>Disposable</u>	Dedicated Bailer? <u>Yes</u>
Pump type _____	Dedicated Pump? _____
If not dedicated, method of cleaning _____	

**\*D. FIELD MEASUREMENT**

Weather Conditions Drizzle 50s

Field Measurements (after stabilization):

Temperature <u>55</u>	Units <u>°F</u>
Equipment used <u>Glass Thermometer</u>	
pH <u>5.30</u>	
Equipment used <u>pH Tester II</u>	
Specific Conductance <u>1134</u>	Units <u>µs/cm</u>
Equipment used <u>Orion 124 (make &amp; model)</u>	

Comments \_\_\_\_\_

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

\*Omit if only measuring groundwater elevations

**FORM FOR GROUNDWATER SAMPLING AND/OR  
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-1R Upgradient \_\_\_\_\_  X  
Downgradient \_\_\_\_\_

Name of person sampling Wayne Shanon

**A. MONITORING WELL/PIEZOMETER CONDITIONS**

Well/Piezometer Properly Capped? Yes Standing Water or Litter No  
If no, explain \_\_\_\_\_ If yes, explain \_\_\_\_\_

**B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)**

Elevation : Top of inner well casing \_\_\_\_\_ Ground Elevation \_\_\_\_\_  
Depth of well 24.08' Inside Casing Diameter (in inches) 2  
Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>10/13/04 @ 13:40</u>	<u>11.65</u>	_____
After Purging	<u>10/13/04 @ 14:10</u>	<u>11.65</u>	_____
Before Sampling	<u>10/13/04 @ 14:25</u>	<u>11.65</u>	_____

**\*C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 6  
No. of Well Volumes (based on current water level) 3  
Was the well pumped/bailed dry? No

Equipment used:

Bailer type <u>Disposable</u>	Dedicated Bailer? <u>Yes</u>
Pump type _____	Dedicated Pump? _____
If not dedicated, method of cleaning _____	

**\*D. FIELD MEASUREMENT**

Weather Conditions 50s drizzle

Field Measurements (after stabilization):

Temperature <u>57</u>	Units <u>°F</u>
Equipment used <u>Glass Thermometer</u>	
pH <u>5.78</u>	
Equipment used <u>pH Tester II</u>	
Specific Conductance <u>1378</u>	Units <u>µs/cm</u>
Equipment used <u>Orion 124 (make &amp; model)</u>	

Comments \_\_\_\_\_

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

\*Omit if only measuring groundwater elevations

**FORM FOR GROUNDWATER SAMPLING AND/OR  
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-2 Upgradient X  
Downgradient \_\_\_\_\_

Name of person sampling Wayne Shannon

**A. MONITORING WELL/PIEZOMETER CONDITIONS**

Well/Piezometer Properly Capped? Yes Standing Water or Litter No  
If no, explain \_\_\_\_\_ If yes, explain \_\_\_\_\_

**B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)**

Elevation : Top of inner well casing \_\_\_\_\_ Ground Elevation \_\_\_\_\_  
Depth of well 62.50' Inside Casing Diameter (in inches) 2  
Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>10/13/04 @ 16:20</u>	<u>18.78</u>	_____
After Purging	<u>10/13/04 @ 16:50</u>	<u>18.78</u>	_____
Before Sampling	<u>10/13/04 @ 16:55</u>	<u>18.78</u>	_____

**\*C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 21  
No. of Well Volumes (based on current water level) 3  
Was the well pumped/bailed dry? No

Equipment used:

Bailer type <u>Disposable</u>	Dedicated Bailer? <u>Yes</u>
Pump type _____	Dedicated Pump? _____
If not dedicated, method of cleaning _____	

**\*D. FIELD MEASUREMENT**

Weather Conditions Cloudy 50s

Field Measurements (after stabilization):

Temperature <u>57</u>	Units <u>°F</u>
Equipment used <u>Glass Thermometer</u>	
pH <u>5.60</u>	
Equipment used <u>pH Tester II</u>	
Specific Conductance <u>1041</u>	Units <u>µs/cm</u>
Equipment used <u>Orion 124 (make &amp; model)</u>	

Comments \_\_\_\_\_

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

\*Omit if only measuring groundwater elevations

**FORM FOR GROUNDWATER SAMPLING AND/OR  
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-3 Upgradient \_\_\_\_\_  
Downgradient \_\_\_\_\_

Name of person sampling Wayne Shanon

**A. MONITORING WELL/PIEZOMETER CONDITIONS**

Well/Piezometer Properly Capped? Yes Standing Water or Litter No  
If no, explain \_\_\_\_\_ If yes, explain \_\_\_\_\_

**B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)**

Elevation : Top of inner well casing \_\_\_\_\_ Ground Elevation \_\_\_\_\_  
Depth of well 25.64' Inside Casing Diameter (in inches) 2  
Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>10/13/04 @ 12:20</u>	<u>20.27</u>	_____
After Purging	<u>10/13/04 @ 13:15</u>	<u>20.27</u>	_____
Before Sampling	<u>10/13/04 @ 13:30</u>	<u>20.27</u>	_____

**\*C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 4  
No. of Well Volumes (based on current water level) 3  
Was the well pumped/bailed dry? No

Equipment used:

Bailer type <u>Disposable</u>	Dedicated Bailer? <u>Yes</u>
Pump type _____	Dedicated Pump? _____
If not dedicated, method of cleaning _____	

**\*D. FIELD MEASUREMENT**

Weather Conditions Shower 50s

Field Measurements (after stabilization):

Temperature <u>55</u>	Units <u>°F</u>
Equipment used <u>Glass Thermometer</u>	
pH <u>5.91</u>	
Equipment used <u>pH Tester II</u>	
Specific Conductance <u>1080</u>	Units <u>µs/cm</u>
Equipment used <u>Orion 124 (make &amp; model)</u>	

Comments \_\_\_\_\_

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

\*Omit if only measuring groundwater elevations

**FORM FOR GROUNDWATER SAMPLING AND/OR  
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-4 Upgradient \_\_\_\_\_  
Downgradient X

Name of person sampling Wayne Shanon

**A. MONITORING WELL/PIEZOMETER CONDITIONS**

Well/Piezometer Property Capped? Yes Standing Water or Litter No  
If no, explain \_\_\_\_\_ If yes, explain \_\_\_\_\_

**B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)**

Elevation : Top of inner well casing \_\_\_\_\_ Ground Elevation \_\_\_\_\_  
Depth of well 29.90' Inside Casing Diameter (in inches) 2  
Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>10/13/04 @ 11:35</u>	<u>22.10</u>	_____
After Purging	<u>10/13/04 @ 11:50</u>	<u>22.10</u>	_____
Before Sampling	<u>10/13/04 @ 12:10</u>	<u>22.10</u>	_____

**\*C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 4  
No. of Well Volumes (based on current water level) 3  
Was the well pumped/bailed dry? No

Equipment used:

Bailer type Disposable Dedicated Bailer? Yes  
Pump type \_\_\_\_\_ Dedicated Pump? \_\_\_\_\_  
If not dedicated, method of cleaning \_\_\_\_\_

**\*D. FIELD MEASUREMENT**

Weather Conditions Cloudy 50s

Field Measurements (after stabilization):

Temperature	<u>55</u>	Units <u>°F</u>
Equipment used	<u>Glass Thermometer</u>	
pH	<u>6.44</u>	
Equipment used	<u>pH Tester II</u>	
Specific Conductance	<u>974</u>	Units <u>µs/cm</u>
Equipment used	<u>Orion 124 (make &amp; model)</u>	

Comments Replaced with a new pressure cap.

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

\*Omit if only measuring groundwater elevations

**FORM FOR GROUNDWATER SAMPLING AND/OR  
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-5 Upgradient \_\_\_\_\_  
Downgradient

Name of person sampling Wayne Shanon

**A. MONITORING WELL/PIEZOMETER CONDITIONS**

Well/Piezometer Properly Capped? Yes Standing Water or Litter No  
If no, explain \_\_\_\_\_ If yes, explain \_\_\_\_\_

**B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)**

Elevation : Top of inner well casing \_\_\_\_\_ Ground Elevation \_\_\_\_\_  
Depth of well 68.12' Inside Casing Diameter (in inches) 2  
Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>10/13/04 @ 10:35</u>	<u>22.34</u>	_____
After Purging	<u>10/13/04 @ 11:10</u>	<u>22.34</u>	_____
Before Sampling	<u>10/13/04 @ 11:30</u>	<u>22.34</u>	_____

**\*C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 22  
No. of Well Volumes (based on current water level) 3  
Was the well pumped/bailed dry? No

Equipment used:

Bailer type Disposable Dedicated Bailer? Yes  
Pump type \_\_\_\_\_ Dedicated Pump? \_\_\_\_\_  
If not dedicated, method of cleaning \_\_\_\_\_

**\*D. FIELD MEASUREMENT**

Weather Conditions Cloudy 50s

Field Measurements (after stabilization):

Temperature	<u>55</u>	Units <u>°F</u>
Equipment used	<u>Glass Thermometer</u>	
pH	<u>6.81</u>	
Equipment used	<u>pH Tester II</u>	
Specific Conductance	<u>992</u>	Units <u>µs/cm</u>
Equipment used	<u>Orion 124 (make &amp; model)</u>	

Comments \_\_\_\_\_

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

\*Omit if only measuring groundwater elevations

**FORM FOR GROUNDWATER SAMPLING AND/OR  
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-6 Upgradient \_\_\_\_\_  
Downgradient X

Name of person sampling Wayne Shannon

**A. MONITORING WELL/PIEZOMETER CONDITIONS**

Well/Piezometer Property Capped? Yes Standing Water or Litter No  
If no, explain \_\_\_\_\_ If yes, explain \_\_\_\_\_

**B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)**

Elevation : Top of inner well casing \_\_\_\_\_ Ground Elevation \_\_\_\_\_  
Depth of well 33.42' Inside Casing Diameter (in inches) 2  
Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>10/13/04 @ 9:00</u>	<u>24.29</u>	_____
After Purging	<u>10/13/04 @ 9:30</u>	<u>24.29</u>	_____
Before Sampling	<u>10/13/04 @ 9:45</u>	<u>24.29</u>	_____

**\*C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 5  
No. of Well Volumes (based on current water level) 3  
Was the well pumped/bailed dry? No

Equipment used:

Bailer type <u>Disposable</u>	Dedicated Bailer? <u>Yes</u>
Pump type _____	Dedicated Pump? _____
If not dedicated, method of cleaning _____	

**\*D. FIELD MEASUREMENT**

Weather Conditions Partly cloudy 50s

Field Measurements (after stabilization):

Temperature <u>55</u>	Units <u>°F</u>
Equipment used <u>Glass Thermometer</u>	
pH <u>7.34</u>	
Equipment used <u>pH Tester II</u>	
Specific Conductance <u>1198</u>	Units <u>µs/cm</u>
Equipment used <u>Orion 124 (make &amp; model)</u>	

Comments \_\_\_\_\_

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

\*Omit if only measuring groundwater elevations

**FORM FOR GROUNDWATER SAMPLING AND/OR  
GROUNDWATER ELEVATION MEASUREMENT**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P

Monitoring Well/Piezometer No. MW-92-7 Upgradient \_\_\_\_\_  
Downgradient X

Name of person sampling Wayne Shannon

**A. MONITORING WELL/PIEZOMETER CONDITIONS**

Well/Piezometer Properly Capped? Yes Standing Water or Litter No  
If no, explain \_\_\_\_\_ If yes, explain \_\_\_\_\_

**B. GROUNDWATER ELEVATIONN MEASUREMENT (+/- 0.01 FOOT, MSL)**

Elevation : Top of inner well casing \_\_\_\_\_ Ground Elevation \_\_\_\_\_

Depth of well 69.48' Inside Casing Diameter (in inches) 2

Equipment Used Slope Water Level Indicator, Model 51453

Groundwater Level (+/- 0.01 foot below top of inner casing, MSL):

	Date/Time	Depth to Groundwater	Groundwater Elevation
Before Purging	<u>10/13/04 @ 9:50</u>	<u>24.43</u>	
After Purging	<u>10/13/04 @ 10:25</u>	<u>24.43</u>	
Before Sampling	<u>10/13/04 @ 10:30</u>	<u>24.43</u>	

**\*C. WELL PURGING**

Quantity of Water Removed from Well (gallons) 22  
No. of Well Volumes (based on current water level) 3

Was the well pumped/bailed dry? No

Equipment used:

Bailer type <u>Disposable</u>	Dedicated Bailer? <u>Yes</u>
Pump type _____	Dedicated Pump? _____
If not dedicated, method of cleaning _____	

**\*D. FIELD MEASUREMENT**

Weather Conditions Partly cloudy 50s

Field Measurements (after stabilization):

Temperature <u>55</u>	Units <u>°F</u>
Equipment used <u>Glass Thermometer</u>	
pH <u>6.65</u>	
Equipment used <u>pH Tester II</u>	
Specific Conductance <u>1084</u>	Units <u>µs/cm</u>
Equipment used <u>Orion 124 (make &amp; model)</u>	

Comments \_\_\_\_\_

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

\*Omit if only measuring groundwater elevations

**FORM FOR  
SURFACE WATER SAMPLING**

Site Name Concrete Supply Construction Rubble Site Permit No. 77-SDP-86P  
Surface Monitoring point No. SW-1 Date/Time 10/13/04 @ 15:10  
Name of Person Sampling Wayne Shannon

**A. TYPE OF MONITORING POINT**

Stream	<u>                </u>	Open Tile	<u>                </u>
Road Ditch	<u>                </u>	Tile with Riser	<u>                </u>
Drainage Ditch	<u>                </u>	Other	<u>Pond</u>

**B. PURPOSE OF MONITORING POINT**

Upstream	<u>                </u>	Downstream	<u>                </u>
Within Landfill	<u>X</u>	Other	<u>                </u>

**C. MOINITORING POINT CONDITIONS**

General description/condition of monitoring point \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Was monitoring point dry? No Too little water to sample? No  
Was water flowing? No If yes, estimate quantity \_\_\_\_\_  
If yes, estimate depth \_\_\_\_\_

Was water discolored? No If yes, describe below.  
Does water have odor? No If yes, describe below.  
Was ground discolored? No If yes, describe below.  
Litter present? No If yes, describe below.

Comments \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**D. FIELD MEASUREMENTS**

Weather Conditions Cloudy drizzle 50's

Field Measurements (after stabilization):

Temperature	<u>61</u>	Units	<u>°F</u>
Equipment used	<u>Glass Thermometer</u>		
pH	<u>9.42</u>		
Equipment used	<u>pH Tester II</u>		
Specific Conductance	<u>1253</u>	Units	<u>µs/cm</u>
Equipment used	<u>Orion (make) 124 (model)</u>		

Comments \_\_\_\_\_

NOTE: Attach Laboratory Report and 8-12" x 11" site plan showing locations of all surface and groundwater monitoring points. One map per sampling round.

\*Omit if only measuring groundwater elevations

**APPENDIX - 5**  
**LABORATORY REPORTS**

Accreditations:  
Iowa DNR: 095  
New Jersey DEP: IA001  
Kansas DHE: E-10287

## ANALYTICAL REPORT

May 13, 2004

Work Order: 14E0002

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Report To:
Chandra Shekar Shekar Engineering 8938 Highland Oaks Drive Johnston, IA 50131

Work Order Information
Date Received: 05/01/2004 8:15AM Collector: Wayne Shannon Phone: 515-334-5062 PO Number:

Project: Concrete Supply Landfill  
Project Number: Concrete Supply

Analyte	Result	MRL	Method	Analyst	Analyzed	Qualifier
14E0002-01 MW-92-6			Matrix: Water		Collected: 04/30/04 09:30	
Trichloroethylene	<0.3 ug/l	0.3	EPA 8260B	TVK	05/11/04	3:21
Surrogate: Dibromofluoromethane	105 %		81-122	TVK	05/11/04	3:21
Surrogate: 1,2-Dichloroethane-d4	98.6 %		76-121	TVK	05/11/04	3:21
Surrogate: Toluene-d8	103 %		79-121	TVK	05/11/04	3:21
Surrogate: 4-Bromofluorobenzene	102 %		82-122	TVK	05/11/04	3:21
Chemical Oxygen Demand	19 mg/l	10	EPA 410.4	SAA	05/04/04	12:19
Chloride	115 mg/l	10	EPA 9252	SAA	05/03/04	15:29
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	05/05/04	14:54
Iron, dissolved	0.053 mg/l	0.030	EPA 6010B	LAR	05/03/04	11:40
14E0002-02 MW-92-7			Matrix: Water		Collected: 04/30/04 10:30	
Trichloroethylene	<0.3 ug/l	0.3	EPA 8260B	TVK	05/11/04	3:59
Surrogate: Dibromofluoromethane	106 %		81-122	TVK	05/11/04	3:59
Surrogate: 1,2-Dichloroethane-d4	98.9 %		76-121	TVK	05/11/04	3:59
Surrogate: Toluene-d8	103 %		79-121	TVK	05/11/04	3:59
Surrogate: 4-Bromofluorobenzene	100 %		82-122	TVK	05/11/04	3:59
Chemical Oxygen Demand	20 mg/l	10	EPA 410.4	SAA	05/04/04	12:19
Chloride	53 mg/l	10	EPA 9252	SAA	05/03/04	15:29
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	05/05/04	14:54
Iron, dissolved	1.25 mg/l	0.030	EPA 6010B	LAR	05/03/04	11:40
14E0002-03 MW-92-4			Matrix: Water		Collected: 04/30/04 12:00	
Trichloroethylene	<0.3 ug/l	0.3	EPA 8260B	TVK	05/11/04	4:38
Surrogate: Dibromofluoromethane	106 %		81-122	TVK	05/11/04	4:38
Surrogate: 1,2-Dichloroethane-d4	99.6 %		76-121	TVK	05/11/04	4:38
Surrogate: Toluene-d8	103 %		79-121	TVK	05/11/04	4:38
Surrogate: 4-Bromofluorobenzene	101 %		82-122	TVK	05/11/04	4:38
Chemical Oxygen Demand	15 mg/l	10	EPA 410.4	SAA	05/04/04	12:19
Chloride	61 mg/l	10	EPA 9252	SAA	05/03/04	15:29
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	05/05/04	14:54
Iron, dissolved	0.041 mg/l	0.030	EPA 6010B	LAR	05/03/04	11:40
14E0002-04 MW-92-5			Matrix: Water		Collected: 04/30/04 11:35	
Trichloroethylene	<0.3 ug/l	0.3	EPA 8260B	TVK	05/11/04	5:17

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8938 Highland Oaks Drive  
Johnston, IA 50131

May 13, 2004

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**Work Order: 14E0002**

Analyte	Result	MRL	Method	Analyst	Analyzed	Qualifier
14E0002-04 MW-92-5			Matrix: Water		Collected: 04/30/04 11:35	
Surrogate: Dibromofluoromethane	106 %		81-122	TVK	05/11/04 5:17	
Surrogate: 1,2-Dichloroethane-d4	99.7 %		76-121	TVK	05/11/04 5:17	
Surrogate: Toluene-d8	103 %		79-121	TVK	05/11/04 5:17	
Surrogate: 4-Bromofluorobenzene	101 %		82-122	TVK	05/11/04 5:17	
Chemical Oxygen Demand	16 mg/l	10	EPA 410.4	SAA	05/04/04 12:19	
Chloride	68 mg/l	10	EPA 9252	SAA	05/03/04 15:29	
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	05/05/04 14:54	
Iron, dissolved	5.95 mg/l	0.030	EPA 6010B	LAR	05/03/04 11:40	
14E0002-05 MW-92-3			Matrix: Water		Collected: 04/30/04 12:55	
Trichloroethylene	0.3 ug/l	0.3	EPA 8260B	TVK	05/11/04 5:55	
Surrogate: Dibromofluoromethane	105 %		81-122	TVK	05/11/04 5:55	
Surrogate: 1,2-Dichloroethane-d4	99.4 %		76-121	TVK	05/11/04 5:55	
Surrogate: Toluene-d8	104 %		79-121	TVK	05/11/04 5:55	
Surrogate: 4-Bromofluorobenzene	101 %		82-122	TVK	05/11/04 5:55	
Chemical Oxygen Demand	<10 mg/l	10	EPA 410.4	SAA	05/04/04 12:19	
Chloride	39 mg/l	10	EPA 9252	SAA	05/03/04 15:29	
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	05/05/04 14:54	
Iron, dissolved	<0.030 mg/l	0.030	EPA 6010B	LAR	05/03/04 11:40	
14E0002-06 MW-92-1R			Matrix: Water		Collected: 04/30/04 13:30	
Trichloroethylene	<0.3 ug/l	0.3	EPA 8260B	TVK	05/11/04 6:34	
Surrogate: Dibromofluoromethane	106 %		81-122	TVK	05/11/04 6:34	
Surrogate: 1,2-Dichloroethane-d4	98.1 %		76-121	TVK	05/11/04 6:34	
Surrogate: Toluene-d8	104 %		79-121	TVK	05/11/04 6:34	
Surrogate: 4-Bromofluorobenzene	101 %		82-122	TVK	05/11/04 6:34	
Chemical Oxygen Demand	<10 mg/l	10	EPA 410.4	SAA	05/04/04 12:19	
Chloride	59 mg/l	10	EPA 9252	SAA	05/03/04 15:29	
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	05/05/04 14:54	
Iron, dissolved	<0.030 mg/l	0.030	EPA 6010B	LAR	05/03/04 11:40	
14E0002-07 MW-92-1			Matrix: Water		Collected: 04/30/04 15:20	
Trichloroethylene	6.3 ug/l	0.3	EPA 8260B	TVK	05/11/04 7:12	
Surrogate: Dibromofluoromethane	105 %		81-122	TVK	05/11/04 7:12	
Surrogate: 1,2-Dichloroethane-d4	99.8 %		76-121	TVK	05/11/04 7:12	
Surrogate: Toluene-d8	103 %		79-121	TVK	05/11/04 7:12	
Surrogate: 4-Bromofluorobenzene	101 %		82-122	TVK	05/11/04 7:12	
Chemical Oxygen Demand	<10 mg/l	10	EPA 410.4	SAA	05/04/04 12:19	
Chloride	42 mg/l	10	EPA 9252	SAA	05/03/04 15:29	
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	05/05/04 14:54	
Iron, dissolved	<0.030 mg/l	0.030	EPA 6010B	LAR	05/03/04 11:40	
14E0002-08 MW-92-2			Matrix: Water		Collected: 04/30/04 14:55	

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Johnston, IA 50131

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**Work Order: 14E0002**

Analyte	Result	MRL	Method	Analyst	Analyzed	Qualifier
14E0002-08 MW-92-2			Matrix: Water		Collected: 04/30/04 14:55	
Trichloroethylene	<0.3 ug/l	0.3	EPA 8260B	TVK	05/11/04 7:51	
Surrogate: Dibromofluoromethane	106 %		81-122	TVK	05/11/04 7:51	
Surrogate: 1,2-Dichloroethane-d4	98.6 %		76-121	TVK	05/11/04 7:51	
Surrogate: Toluene-d8	103 %		79-121	TVK	05/11/04 7:51	
Surrogate: 4-Bromofluorobenzene	99.8 %		82-122	TVK	05/11/04 7:51	
Chemical Oxygen Demand	17 mg/l	10	EPA 410.4	SAA	05/04/04 12:19	
Chloride	73 mg/l	10	EPA 9252	SAA	05/03/04 15:29	
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	05/05/04 14:54	
Iron, dissolved	7.67 mg/l	0.030	EPA 6010B	LAR	05/03/04 11:40	
14E0002-09 SW-1			Matrix: Water		Collected: 04/30/04 13:50	
Trichloroethylene	<0.3 ug/l	0.3	EPA 8260B	TVK	05/11/04 8:30	
Surrogate: Dibromofluoromethane	106 %		81-122	TVK	05/11/04 8:30	
Surrogate: 1,2-Dichloroethane-d4	98.6 %		76-121	TVK	05/11/04 8:30	
Surrogate: Toluene-d8	103 %		79-121	TVK	05/11/04 8:30	
Surrogate: 4-Bromofluorobenzene	101 %		82-122	TVK	05/11/04 8:30	
Chemical Oxygen Demand	26 mg/l	10	EPA 410.4	SAA	05/04/04 12:19	
Chloride	49 mg/l	10	EPA 9252	SAA	05/03/04 15:29	
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	05/05/04 14:54	
Iron, dissolved	<0.030 mg/l	0.030	EPA 6010B	LAR	05/03/04 11:40	
14E0002-10 Trip Blank			Matrix: Water		Collected: 04/30/04 00:00	
Trichloroethylene	<0.3 ug/l	0.3	EPA 8260B	TVK	05/11/04 9:09	
Surrogate: Dibromofluoromethane	106 %		81-122	TVK	05/11/04 9:09	
Surrogate: 1,2-Dichloroethane-d4	99.2 %		76-121	TVK	05/11/04 9:09	
Surrogate: Toluene-d8	104 %		79-121	TVK	05/11/04 9:09	
Surrogate: 4-Bromofluorobenzene	102 %		82-122	TVK	05/11/04 9:09	
Chemical Oxygen Demand	<10 mg/l	10	EPA 410.4	SAA	05/04/04 12:19	
Chloride	<10 mg/l	10	EPA 9252	SAA	05/03/04 15:29	
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	05/05/04 14:54	
Iron, dissolved	<0.030 mg/l	0.030	EPA 6010B	LAR	05/03/04 11:40	

End of Report



Keystone Laboratories, Inc.

Jeffrey King, Ph.D.  
Laboratory Director

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## CHAIN OF CUSTODY RECORD



600 E. 17<sup>th</sup> St. S.  
Newton, IA 50208  
Phone: 641-792-8451  
Fax: 641-792-7989

3012 Ansborough Ave.  
Waterloo, IA 50701  
Phone: 319-235-4440  
Fax: 319-235-2480  
[www.keystonelabs.com](http://www.keystonelabs.com)

1304 Adams  
Kansas City, KS 66103  
Phone: 913-321-7856  
Fax: 913-321-7937

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PRINT OR TYPE INFORMATION BELOW

SAMPLER: Wayne Shannon

SITE NAME: Concrete Supply

ADDRESS: E 30<sup>th</sup> & Maury

CITY/ST/ZIP: Des Moines, IA

PHONE:

REPORT TO:  
NAME: Chandra Shekar  
COMPANY NAME: Shekar Engineering  
ADDRESS: P.O. Box 3625  
CITY/ST/ZIP: Des Moines, IA  
PHONE: 334-5062  
FAX:

BILL TO:  
NAME: Same  
COMPANY NAME:  
ADDRESS:  
CITY/ST/ZIP:  
PHONE:  
Keystone Quote No.:  
(If Applicable)

CLIENT SAMPLE NUMBER	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	MATRIX	GRAB/COMPOSITE	ANALYSES REQUIRED						LAB USE ONLY			
							Landfill	E	Trichloroethylene					Laboratory Work Order No.	Sample Temperature Upon Receipt: °C	Laboratory Sample Number
MW-92-6	30 Apr. 9:30			6	H <sub>2</sub> O G	X X								14E0002		01
MW-92-7	1	10:30		1	1	1	1	1	1							02
MW-92-4		12:00		1	1	1	1	1	1							03
MU-92-5		11:35		1	1	1	1	1	1							04
MW-92-3		12:55		1	1	1	1	1	1							05
MW-92-1R		13:30		1	1	1	1	1	1							06
MW-92-1		15:20		1	1	1	1	1	1							07
MW-92-2		14:55		1	1	1	1	1	1							08
SW-1		13:50		1	1	1	1	1	1							09
Trip Blank	↓	—		1	1	1	1	1	1							10

Relinquished by: (Signature)

Date 1 May 04

Time

Received by: (Signature)

Date

Time

Date

Time

Turn-Around:  
 Standard

Rush

Contact Lab Prior to Submission

Relinquished by: (Signature)

Date

Time

Received for Lab by: (Signature)

Date 5/1/04

Time 0815

Date

Time

Remarks:

Accreditations:  
 Iowa DNR: 095  
 New Jersey DEP: IA001  
 Kansas DHE: E-10287

## ANALYTICAL REPORT

October 25, 2004

Work Order: 14J0587

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Report To:
Chandra Shekar Shekar Engineering 8938 Highland Oaks Drive Johnston, IA 50131

Work Order Information:
Date Received: 10/14/2004 6:30AM Collector: Shannon, Wayne Phone: 515-334-5062 PO Number:

Project: Concrete Supply Landfill  
 Project Number: Concrete Supply

Analyte	Result	MRL	Method	Analyst	Analyzed	Qualifier
14J0587-01 MW-92-1			Matrix: Water		Collected:	10/13/04 16:55
<i>Determination of Volatile Organic Compounds</i>						
Trichloroethylene	6.4 ug/l	0.3	EPA 8260B	TVK	10/20/04 15:09	
Surrogate: Dibromofluoromethane	89.7 %	81-122		TVK	10/20/04 15:09	
Surrogate: 1,2-Dichloroethane-d4	89.0 %	76-121		TVK	10/20/04 15:09	
Surrogate: Toluene-d8	97.2 %	79-121		TVK	10/20/04 15:09	
Surrogate: 4-Bromofluorobenzene	94.8 %	82-122		TVK	10/20/04 15:09	
<i>Determination of Conventional Chemistry Parameters</i>						
Chemical Oxygen Demand	<10 mg/l	10	EPA 410.4	RVV	10/21/04 8:54	
Chloride	44 mg/l	10	EPA 9252	SNT	10/14/04 12:30	
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	10/15/04 11:10	
Phenols, total	<0.100 mg/l	0.100	EPA 9065	SNT	10/19/04 7:00	
Total Organic Halogens (TOX)	0.032 mg/l	0.010	EPA 9020	TVK	10/21/04 0:00	
<i>Determination of Dissolved Metals</i>						
Iron, dissolved	0.208 mg/l	0.030	EPA 6010B	LAR	10/14/04 14:46	
14J0587-02 MW-92-1R			Matrix: Water		Collected:	10/13/04 14:25
<i>Determination of Volatile Organic Compounds</i>						
Trichloroethylene	<0.3 ug/l	0.3	EPA 8260B	TVK	10/20/04 15:48	
Surrogate: Dibromofluoromethane	90.9 %	81-122		TVK	10/20/04 15:48	
Surrogate: 1,2-Dichloroethane-d4	89.2 %	76-121		TVK	10/20/04 15:48	
Surrogate: Toluene-d8	96.4 %	79-121		TVK	10/20/04 15:48	
Surrogate: 4-Bromofluorobenzene	94.4 %	82-122		TVK	10/20/04 15:48	
<i>Determination of Conventional Chemistry Parameters</i>						
Chemical Oxygen Demand	<10 mg/l	10	EPA 410.4	RVV	10/21/04 8:54	
Chloride	53 mg/l	10	EPA 9252	SNT	10/14/04 12:30	
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	10/15/04 11:10	
Phenols, total	<0.100 mg/l	0.100	EPA 9065	SNT	10/19/04 7:00	
Total Organic Halogens (TOX)	0.023 mg/l	0.010	EPA 9020	TVK	10/21/04 0:00	
<i>Determination of Dissolved Metals</i>						
Iron, dissolved	<0.030 mg/l	0.030	EPA 6010B	LAR	10/14/04 14:50	

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**Work Order: 14J0587**

Analyte	Result	MRL	Method	Analyst	Analyzed	Qualifier
14J0587-02	MW-92-1R		Matrix:Water		Collected:	10/13/04 14:25
14J0587-03	MW-92-2		Matrix:Water		Collected:	10/13/04 16:10
<i>Determination of Volatile Organic Compounds</i>						
Trichloroethylene	0.8 ug/l	0.3	EPA 8260B	TVK	10/20/04 16:26	
Surrogate: Dibromofluoromethane	92.3 %		81-122	TVK	10/20/04 16:26	
Surrogate: 1,2-Dichloroethane-d4	91.7 %		76-121	TVK	10/20/04 16:26	
Surrogate: Toluene-d8	97.0 %		79-121	TVK	10/20/04 16:26	
Surrogate: 4-Bromofluorobenzene	94.5 %		82-122	TVK	10/20/04 16:26	
<i>Determination of Conventional Chemistry Parameters</i>						
Chemical Oxygen Demand	<10 mg/l	10	EPA 410.4	RVV	10/21/04 8:54	
Chloride	72 mg/l	10	EPA 9252	SNT	10/14/04 12:30	
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	10/15/04 11:10	
Phenols, total	<0.100 mg/l	0.100	EPA 9065	SNT	10/19/04 7:00	
Total Organic Halogens (TOX)	0.020 mg/l	0.010	EPA 9020	TVK	10/21/04 0:00	
<i>Determination of Dissolved Metals</i>						
Iron, dissolved	7.21 mg/l	0.030	EPA 6010B	LAR	10/14/04 14:54	
14J0587-04	MW-92-3		Matrix:Water		Collected:	10/13/04 13:30
<i>Determination of Volatile Organic Compounds</i>						
Trichloroethylene	<0.3 ug/l	0.3	EPA 8260B	TVK	10/20/04 17:04	
Surrogate: Dibromofluoromethane	93.1 %		81-122	TVK	10/20/04 17:04	
Surrogate: 1,2-Dichloroethane-d4	92.2 %		76-121	TVK	10/20/04 17:04	
Surrogate: Toluene-d8	96.5 %		79-121	TVK	10/20/04 17:04	
Surrogate: 4-Bromofluorobenzene	93.0 %		82-122	TVK	10/20/04 17:04	
<i>Determination of Conventional Chemistry Parameters</i>						
Chemical Oxygen Demand	11 mg/l	10	EPA 410.4	RVV	10/21/04 8:54	
Chloride	24 mg/l	10	EPA 9252	SNT	10/14/04 12:30	
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	10/15/04 11:10	
Phenols, total	<0.100 mg/l	0.100	EPA 9065	SNT	10/19/04 7:00	
Total Organic Halogens (TOX)	0.013 mg/l	0.010	EPA 9020	TVK	10/21/04 0:00	
<i>Determination of Dissolved Metals</i>						
Iron, dissolved	<0.030 mg/l	0.030	EPA 6010B	LAR	10/14/04 14:58	
14J0587-05	MW-92-4		Matrix:Water		Collected:	10/13/04 12:10
<i>Determination of Volatile Organic Compounds</i>						
Trichloroethylene	<0.3 ug/l	0.3	EPA 8260B	TVK	10/20/04 17:43	
Surrogate: Dibromofluoromethane	92.7 %		81-122	TVK	10/20/04 17:43	
Surrogate: 1,2-Dichloroethane-d4	91.3 %		76-121	TVK	10/20/04 17:43	
Surrogate: Toluene-d8	97.9 %		79-121	TVK	10/20/04 17:43	

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October 25, 2004

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**Work Order: 14J0587**

Analyte	Result	MRL	Method	Analyst	Analyzed	Qualifier
14J0587-05 MW-92-4			Matrix: Water		Collected:	10/13/04 12:10
<i>Determination of Volatile Organic Compounds</i>						
Surrogate: 4-Bromofluorobenzene	93.4 %		82-122	TVK	10/20/04	17:43
<i>Determination of Conventional Chemistry Parameters</i>						
Chemical Oxygen Demand	<10 mg/l	10	EPA 410.4	RVV	10/21/04	8:54
Chloride	111 mg/l	10	EPA 9252	LAR	10/18/04	14:08
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	10/19/04	14:37
Phenols, total	<0.100 mg/l	0.100	EPA 9065	SNT	10/19/04	7:00
Total Organic Halogens (TOX)	0.040 mg/l	0.010	EPA 9020	TVK	10/21/04	0:00
<i>Determination of Dissolved Metals</i>						
Iron, dissolved	<0.030 mg/l	0.030	EPA 6010B	LAR	10/14/04	15:10
14J0587-06 MW-92-5			Matrix: Water		Collected:	10/13/04 11:30
<i>Determination of Volatile Organic Compounds</i>						
Trichloroethylene	<0.3 ug/l	0.3	EPA 8260B	TVK	10/20/04	21:32
Surrogate: Dibromofluoromethane	94.1 %		81-122	TVK	10/20/04	21:32
Surrogate: 1,2-Dichloroethane-d4	92.9 %		76-121	TVK	10/20/04	21:32
Surrogate: Toluene-d8	97.7 %		79-121	TVK	10/20/04	21:32
Surrogate: 4-Bromofluorobenzene	92.8 %		82-122	TVK	10/20/04	21:32
<i>Determination of Conventional Chemistry Parameters</i>						
Chemical Oxygen Demand	<10 mg/l	10	EPA 410.4	RVV	10/21/04	8:54
Chloride	68 mg/l	10	EPA 9252	LAR	10/18/04	14:08
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	10/19/04	14:37
Phenols, total	<0.100 mg/l	0.100	EPA 9065	SNT	10/19/04	7:00
Total Organic Halogens (TOX)	0.019 mg/l	0.010	EPA 9020	TVK	10/21/04	0:00
<i>Determination of Dissolved Metals</i>						
Iron, dissolved	<0.030 mg/l	0.030	EPA 6010B	LAR	10/14/04	15:14
14J0587-07 MW-92-6			Matrix: Water		Collected:	10/13/04 09:45
<i>Determination of Volatile Organic Compounds</i>						
Trichloroethylene	<0.3 ug/l	0.3	EPA 8260B	TVK	10/20/04	22:10
Surrogate: Dibromofluoromethane	96.3 %		81-122	TVK	10/20/04	22:10
Surrogate: 1,2-Dichloroethane-d4	93.3 %		76-121	TVK	10/20/04	22:10
Surrogate: Toluene-d8	97.6 %		79-121	TVK	10/20/04	22:10
Surrogate: 4-Bromofluorobenzene	94.2 %		82-122	TVK	10/20/04	22:10
<i>Determination of Conventional Chemistry Parameters</i>						
Chemical Oxygen Demand	13 mg/l	10	EPA 410.4	RVV	10/21/04	8:54
Chloride	123 mg/l	10	EPA 9252	LAR	10/18/04	14:08
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	10/19/04	14:37

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MRL = Method Reporting Limit.

Shekar Engineering  
8938 Highland Oaks Drive  
Johnston, IA 50131

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**Work Order: 14J0587**

Analyte	Result	MRL	Method	Analyst	Analyzed	Qualifier
14J0587-07 MW-92-6			Matrix:Water		Collected:	10/13/04 09:45
<i>Determination of Conventional Chemistry Parameters</i>						
Phenols, total	<0.100 mg/l	0.100	EPA 9065	SNT	10/19/04	7:00
Total Organic Halogens (TOX)	0.042 mg/l	0.010	EPA 9020	TVK	10/21/04	0:00
<i>Determination of Dissolved Metals</i>						
Iron, dissolved	0.068 mg/l	0.030	EPA 6010B	LAR	10/14/04	15:18
14J0587-08 MW-92-7			Matrix:Water		Collected:	10/13/04 10:30
<i>Determination of Volatile Organic Compounds</i>						
Trichloroethylene	<0.3 ug/l	0.3	EPA 8260B	TVK	10/20/04	22:48
Surrogate: Dibromofluoromethane	95.8 %		81-122	TVK	10/20/04	22:48
Surrogate: 1,2-Dichloroethane-d4	94.0 %		76-121	TVK	10/20/04	22:48
Surrogate: Toluene-d8	97.6 %		79-121	TVK	10/20/04	22:48
Surrogate: 4-Bromofluorobenzene	94.2 %		82-122	TVK	10/20/04	22:48
<i>Determination of Conventional Chemistry Parameters</i>						
Chemical Oxygen Demand	<10 mg/l	10	EPA 410.4	RVV	10/21/04	8:54
Chloride	49 mg/l	10	EPA 9252	LAR	10/18/04	14:08
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	10/19/04	14:37
Phenols, total	<0.100 mg/l	0.100	EPA 9065	SNT	10/19/04	7:00
Total Organic Halogens (TOX)	0.022 mg/l	0.010	EPA 9020	TVK	10/21/04	0:00
<i>Determination of Dissolved Metals</i>						
Iron, dissolved	6.33 mg/l	0.030	EPA 6010B	LAR	10/14/04	15:22
14J0587-09 SW-1			Matrix:Water		Collected:	10/13/04 15:10
<i>Determination of Volatile Organic Compounds</i>						
Trichloroethylene	<0.3 ug/l	0.3	EPA 8260B	TVK	10/20/04	23:26
Surrogate: Dibromofluoromethane	94.0 %		81-122	TVK	10/20/04	23:26
Surrogate: 1,2-Dichloroethane-d4	92.0 %		76-121	TVK	10/20/04	23:26
Surrogate: Toluene-d8	97.0 %		79-121	TVK	10/20/04	23:26
Surrogate: 4-Bromofluorobenzene	96.6 %		82-122	TVK	10/20/04	23:26
<i>Determination of Conventional Chemistry Parameters</i>						
Chemical Oxygen Demand	<10 mg/l	10	EPA 410.4	RVV	10/21/04	8:54
Chloride	49 mg/l	10	EPA 9252	LAR	10/18/04	14:08
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	10/19/04	14:37
Phenols, total	<0.100 mg/l	0.100	EPA 9065	SNT	10/19/04	7:00
Total Organic Halogens (TOX)	<0.010 mg/l	0.010	EPA 9020	TVK	10/21/04	0:00
<i>Determination of Dissolved Metals</i>						
Iron, dissolved	<0.030 mg/l	0.030	EPA 6010B	LAR	10/14/04	15:26

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Johnston, IA 50131

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**Work Order: 14J0587**

Analyte	Result	MRL	Method	Analyst	Analyzed	Qualifier
14J0587-10 Trip Blank			Matrix: Water		Collected:	10/12/04 00:00
<i>Determination of Volatile Organic Compounds</i>						
Trichloroethylene	<0.3 ug/l	0.3	EPA 8260B	TVK	10/21/04	0:04
Surrogate: Dibromofluoromethane	96.2 %		81-122	TVK	10/21/04	0:04
Surrogate: 1,2-Dichloroethane-d4	92.9 %		76-121	TVK	10/21/04	0:04
Surrogate: Toluene-d8	96.9 %		79-121	TVK	10/21/04	0:04
Surrogate: 4-Bromofluorobenzene	95.3 %		82-122	TVK	10/21/04	0:04
<i>Determination of Conventional Chemistry Parameters</i>						
Chemical Oxygen Demand	<10 mg/l	10	EPA 410.4	RVV	10/21/04	8:54
Chloride	<10 mg/l	10	EPA 9252	LAR	10/18/04	14:08
Nitrogen, Ammonia	<1.0 mg/l	1.0	SM 4500-NH3 F	SAA	10/19/04	14:37
Phenols, total	<0.100 mg/l	0.100	EPA 9065	SNT	10/19/04	7:00
Total Organic Halogens (TOX)	<0.010 mg/l	0.010	EPA 9020	TVK	10/21/04	0:00
<i>Determination of Dissolved Metals</i>						
Iron, dissolved	<0.030 mg/l	0.030	EPA 6010B	LAR	10/14/04	15:30

End of Report

Keystone Laboratories, Inc.  
Jeffrey King, Ph.D.  
Laboratory Director

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## CHAIN OF CUSTODY RECORD

**Keystone**  
LABORATORIES, INC.

600 E. 17<sup>th</sup> St. S.  
Newton, IA 50208  
Phone: 641-792-8451  
Fax: 641-792-7989

3012 Ansborough Ave.  
Waterloo, IA 50701  
Phone: 319-235-4440  
Fax: 319-235-2480  
[www.keystonelabs.com](http://www.keystonelabs.com)

1304 Adams  
Kansas City, KS 66103  
Phone: 913-321-7856  
Fax: 913-321-7937

PAGE \_\_\_\_\_ OF \_\_\_\_\_

PRINT OR TYPE INFORMATION BELOW

SAMPLER: Wayne Shannon

SITE NAME: Concrete Supply Const.

ADDRESS: 1108 SE 30<sup>th</sup> ST.

CITY/ST/ZIP: Des Moines, IA

PHONE:

REPORT TO:

NAME: chandra shkar

COMPANY NAME: shkar Engineering

ADDRESS: P.O. Box 3625

CITY/ST/ZIP: Des Moines, IA

PHONE: 334-5062

FAX:

BILL TO:

NAME: shkar Eng.

COMPANY NAME:

ADDRESS:

CITY/ST/ZIP:

PHONE:

Keystone Quote No.:

(If Applicable)

CLIENT SAMPLE NUMBER	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	MATRIX	GRAB/COMPOSITE	ANALYSES REQUIRED			LAB USE ONLY	
							Landfill E	Landfill F	Trichloroethylene	LABORATORY WORK ORDER NO.	SAMPLE TEMPERATURE UPON RECEIPT:
MW-92-1	13 Oct	16:55		8	H <sub>2</sub> O G	X	X	X		1490587	°C
MW-92-1R		14:25		1							
MW-92-2		16:10		1							
MW-92-3		13:30		1							
MW-92-4		12:10		1							
MW-92-5		11:30		1							
MW-92-6		9:45		1							
MW-92-7		10:30		1							
MW-1		15:10		1							
Trip Blank		—		1							

Relinquished by: (Signature)

Wayne

Date  
14 Oct

Time  
6:30

Received by: (Signature)

Date

Turn-Around:  
Standard

Rush

Contact Lab Prior to Submission

Relinquished by: (Signature)

Date

Time

Received for Lab by: (Signature)

Wayne

Date

10-14-04

Remarks:

Time  
6:30